

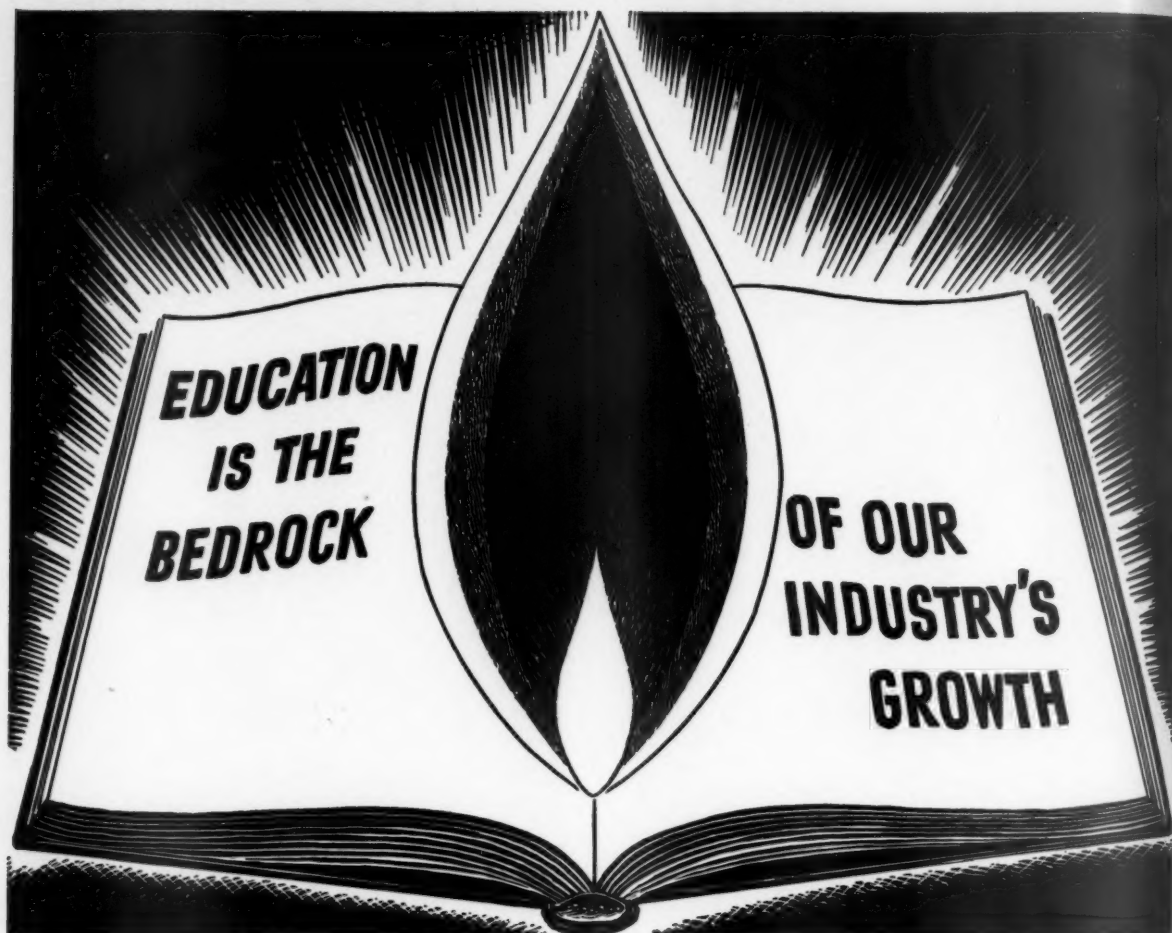
AMERICAN GAS ASSOCIATION

Monthly

recognition of
lifetime of gas
industry service,
this issue is dedi-
cated to the mem-
ory of the late
George F. Mitchell

APRIL
1952





A man is no more valuable than his information . . . and this goes for our Industry, too. For unless each company's personnel knows more of the answers — the competitive factual answers based on all that's new and progressive within our Industry — its leadership can be challenged.

Informed personnel opinion . . . based on first-hand discussions with our Industry's first-rate leaders . . . is worth its weight in gold — to you, and to the men you are training to hold important key positions.

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GAS APPLIANCE MANUFACTURERS ASSOCIATION, INC.
60 E. 42nd Street • New York 17, N. Y.



THE SLENDER transmission tower of one of Columbia Gas System's 56 short wave radio stations rises in the foothills of the Appalachians, near Clendenin, West Virginia

WITH THE PASSING of George F. Mitchell, the gas industry has lost a leader of one of its greatest pioneering periods. His gas industry career spanned the vicissitudes of the shift from gas lighting to superiority among residential, industrial and commercial heating—from a status of predicted moribundity to one of financial solidity and promotional vitality.

In addition to guiding one of the country's large utilities in a program of growth and aggressive sales promotion, Mr. Mitchell was a leader in the country-wide expansion of natural gas supply lines. He has also been credited with introducing the therm rate, which enables utilities shifting to natural gas to profit from its greater heating value.

These contributions, in addition to his generous devotion of time to the work of his industry's association, earned George F. Mitchell the accolades of the industry.

JAMES M. BEALL
DIRECTOR, PUBLIC INFORMATION
LAURANCE C. MESSICK
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CONTENTS FOR APRIL 1952

FEATURES

RECORD GAINS FOR GAS RESERVES	3
A. G. A. PRESIDENT DIES SUDDENLY	7
SULPHUR FROM WASTE GAS—by Gordon A. Connell and Robert V. Jones	8
PICK VITAL CONVENTION THEMES	9
NEW FRYER TRIPLES FOOD OUTPUT	10
ANNUAL REPORTS CITE '51 GAINS	13
GAS RATES LAG AS COSTS RISE	15
STRESS INSTALLATION STANDARDS—by C. George Segeler	17
OPEN MODEL WAREHOUSE	20
STUDY RAISES JOB EFFICIENCY—by J. C. Murtha	22

SECTIONS

MORE SKIP READINGS REQUIRED (ACCOUNTING)	25
SCHOOL TO IMPROVE SALESMANSHIP (INDUSTRIAL & COMMERCIAL) .	27
EMPHASIS ON NATURAL GAS (OPERATING)	29

DEPARTMENTS

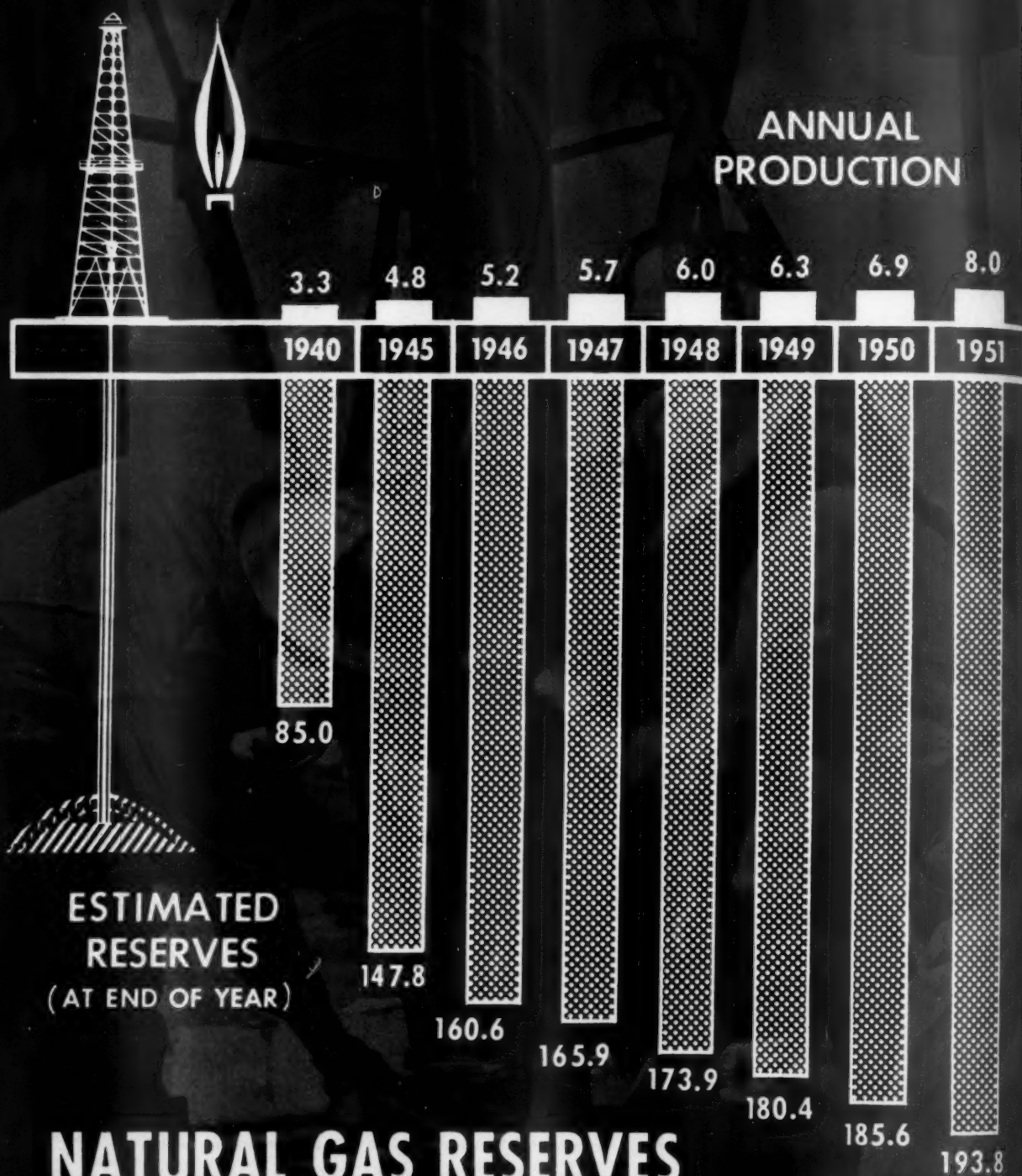
INDUSTRY NEWS	32
CURRENT STATISTICS OF THE GAS INDUSTRY	36
PERSONAL AND OTHERWISE	37
OBITUARY	42
CONVENTION CALENDAR	47
PERSONNEL SERVICE	48

THE MONTHLY IS INDEXED BY THE INDUSTRIAL ARTS INDEX

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NATURAL GAS RESERVES

AND PRODUCTION IN THE U.S.

(IN TRILLION CUBIC FEET)

Record gains for gas reserves

Proved recoverable natural gas reserves on December 31, 1951, totaled 193.8 trillion cubic feet, an increase of 8.2 trillion feet over estimated reserves of 185.6 trillion cubic feet a year earlier, according to a joint report of the Committee on Reserves of the American Gas Association and the American Petroleum Institute. These reserves climbed to a new record high level, scoring the second highest increase made since these estimates were started and were registered over an all-time high production of approximately 8.0 trillion cubic feet of natural gas used during 1951. In 1950 the production of natural gas was 6.89 trillion cubic feet.

The A. G. A. Committee on Natural Gas Reserves estimated proved recoverable reserves of natural gas liquids on December 31, 1951, also had risen to a record level, totaling 4.72 billion barrels. This compares with a previous high of 4.27 billion barrels at the end of 1950 and the increase was made despite a record production of 267 million barrels of natural gas last year.

Crude oil reserves on December 31, 1951, were 27.47 billion barrels compared with 25.26 barrels estimated at the end of 1950. The total estimated liquid hydrocarbon reserves on December 31, 1951, were 32.19 billion barrels compared with 29.54 billion barrels a year earlier.

The increase of 13 trillion cubic feet in proved natural gas reserves through extensions and revisions of previous estimates for existing fields reflects the results of improved drilling methods and increased exploration. Discoveries of new natural gas fields and new pools in old fields also accounted for an important increase of 3.0 trillion cubic feet in proved recoverable reserves. Estimated reserves of natural gas in underground storage at the end of 1951 were 132.8 billion cubic feet greater than on December 31, 1950.

Proved reserves of natural gas and natural gas liquids made substantial gains in spite of greatly increased production. New pipelines serving metropolitan New York, New England and increased residential and industrial use in other areas, brought natural gas production to an all-time high level.

The sixth annual joint report of the A. G. A. Committee on Natural Gas Reserves and the American Petroleum Institute Committee on Petroleum Reserves summarizes the proved recoverable reserves of natural gas and natural gas liquids of the

United States, as of December 31, 1951.

The A. G. A. Committee on Natural Gas Reserves has as its chairman N. C. McGowan, president, United Gas Pipeline Co., Shreveport. Members are: R. M. Bauer, Southern California Gas Co.; E. A. Brown, Lone Star Gas Co.; R. O. Garrett, Arkansas Louisiana Gas Co.; and C. C. Hoffman, Cities Service Gas Company. Also serving on the committee are F. S. Lott, Bureau of Mines; L. H. Meltzer, Union Producing Co.; E. D. Pressler, Humble Oil and Refining Co.; and E. E. Roth, Columbia Gas System Service Corporation. In addition, there are: James Royds, Continental Oil Co.; J. T. Scopes, Union Producing Co.; H. N. Toler, Southern Natural Gas Co.; and C. E. Turner, Phillips Petroleum Company. G. H. Smith, A. G. A., is committee secretary, while O. E. Zwanzig, also A. G. A., is assistant secretary.

A total of 56 trained geologists and engineers in the natural gas field serve as members of the subcommittees covering the various gas producing regions.

The American Petroleum Institute Committee on Petroleum Reserves is headed by F. H. Lahee, Sun Oil Co., while D. V. Carter, Magnolia Petroleum Co., is vice-chairman and Fred Van Covern, API, is secretary. Members of the committee are: R. F. Baker, The Texas Co.; Frank R. Clark, The Ohio Oil Co.; Morgan J. Davis, Humble Oil & Refining Co.; and Graham B. Moody, Standard Oil Co. of California. Other members are: Morris Muskat, Gulf Oil Corp.; J. M. Sands, Phillips Petroleum Co.; P. R. Schultz, Stanolind Oil & Gas Co.; and Theron Wasson, The Pure Oil Company.

Table 3 is a summary of the committee's annual estimates of proved natural gas reserves for the past seven years, reflecting the changes in the natural gas reserve position in the United States during each of the six years since December 31, 1945. Table 4 shows the proved natural gas liquids reserves of the United States for the last six years and the changes which have taken place in these reserves annually since the first estimate was made as of December 31, 1946.

In order to arrive at an estimate of the total proved liquid hydrocarbon reserves in the United States, the reserves of natural gas liquids shown in Table 2 have been added to the reserves of crude oil estimated by the Committee on Petroleum Reserves of the American Petroleum Institute. The total

Present at the A. G. A. Natural Gas Reserves Committee meeting were, l. to r., seated: E. D. Pressler, R. O. Garrett, O. E. Zwanzig, Acting Chairman L. H. Meltzer; R. M. Bauer, H. N. Toler, J. S. Royds, E. E. Roth and J. R. Arrington. Standing: Bernie Morgan, C. C. Ingram, C. E. Turner, D. S. Colby, J. T. Drindak and G. H. Smith



liquid hydrocarbon reserves are shown in Table 4 of the report of the Committee on Petroleum Reserves.

The committee has continued the practice begun in the report of December 31, 1948 of reporting the volume of gas in storage in underground reservoirs. The "stored gas" is considered to be the gas which has been transferred from its original location in a gas and/or oil field to another natural underground reservoir for the primary purposes of conservation, fuller utilization of pipeline capacities and more effective delivery to markets. The "stored gas" reserve is the quantity placed in a natural storage reservoir and not yet removed. Any additional recoverable gas which may have been in the underground storage reservoirs when injection was begun and has not yet been produced is classified and listed in its proper category. Adjustments in, withdrawals from, or additions to storage are included in the figures shown under the heading "Net Change in Underground Storage." This is distinguished from "net production" which is gross withdrawals less gas injected into producing reservoirs; changes in underground storage are excluded.

The committee points out again that it is often not possible to estimate the total reserves of a field in the year of its discovery. Satisfactory estimates can be made only after there has been sufficient drilling in the field and, in some cases, adequate production history. For these reasons, the reserves listed as discovered during any current year must be considered only as the reserves indicated by the drilling in that year. The estimated reserves of the new fields and pools will be revised in future reports in the light of later developments and shown as "Extensions and Revisions."

The procedure followed in estimating and assembling the proved reserve figures were the same as those used in the past reports. Proved reserves may be in either the drilled or undrilled portion of a given field. Where the undrilled areas are considered proved, they are so related to the developed acreage and to the known field geology and structure that their productive ability is considered assured. Proved recoverable reserves of natural gas are the reserves estimated to be producible under present operating practices. Since the estimates are made by fields, the recovery factors or abandonment pressures



NATURAL GAS

LIQUID HYDROCARBON RESERVES

	December 31, 1951	December 31, 1950 (Thousands of Cubic Feet)	Increase 1951 Over 1950
Reserves, Natural Gas	193,811,500,000	185,592,699,000	8,218,801,000

	1951	1950	Increase 1951 Over 1950
Production, Natural Gas	7,966,941,000	6,892,678,000	1,074,263,000

The production figures for 1951 are net after deducting the amount of gas returned to reservoirs for cycling and pressure maintenance.

RESERVES	December 31, 1951	December 31, 1950 (Barrels of 42 gallons)	Increase 1951 Over 1950
Crude Oil	27,468,031,000	25,268,398,000	2,199,633,000
Natural Gas Liquids	4,724,602,000	4,267,663,000	456,939,000
Total Liquid Hydrocarbons	32,192,633,000	29,536,061,000	2,656,572,000
PRODUCTION	1951	1950	Increase 1951 Over 1950
Crude Oil	2,214,321,000	1,943,776,000	270,545,000
Natural Gas Liquids	267,052,000	227,411,000	39,641,000
Total Liquid Hydrocarbons	2,481,373,000	2,171,187,000	310,186,000

TABLE 1
ESTIMATED PROVED RECOVERABLE RESERVES OF NATURAL GAS IN THE UNITED STATES

(Millions of Cubic Feet—14.65 psia, at 60 Deg. F)

	Changes in Reserves During 1951					Reserves as of December 31, 1951 ^b				
	Reserves ^a as of Dec. 31, 1950 (1)	Extensions and Revisions ^b (2)	Discoveries of New Fields and New Pools in Old Fields ^b (3)	Net Change in Under- ground Storage ^c (4)	Net Produc- tion ^d (5)	Total (Columns 7 + 8 + 9 + 10, also Columns 1 + 2 + 3 + 4 less Column 5) (6)	Non- Associated ^e (7)	Associated ^f (8)	Dissolved ^g (9)	Under- ground Storage ^h (10)
Arkansas	907,593	27,545	38,965	(-)-4	42,785	931,314	478,298	149,733	301,287	1,996
California ⁱ	9,760,386	170,711	66,827	(-)-4,317	511,162	9,482,445	2,615,335	2,155,881	4,696,387	14,842
Colorado	1,115,473	22,955	24,504	0	24,481	1,138,451	487,134	42,142	609,175	0
Illinois	229,893	29,795	5,650	0	38,205	227,133	4,333	10,000	212,800	0
Indiana	31,190	2,520	3,340	297	6,540	30,807	3,500	4,500	21,760	1,047
Kansas	13,790,834	76,206	40,971	2,326	452,839	13,457,498	13,015,271	133,419	277,181	31,627
Kentucky	1,330,583	59,386	9,520	(-)-401	73,500	1,325,588	1,253,003	0	61,400	11,185
Louisiana ⁱ	28,533,266	1,147,998	480,933	0	1,157,166	29,005,031	23,147,675	3,829,371	2,027,985	0
Michigan	195,074	8,786	230	10,347	11,412	203,025	119,011	0	41,366	42,648
Mississippi	2,519,206	86,321	35,477	40	201,075	2,439,959	1,721,717	405,552	312,660	40
Montana	797,361	69,336	0	3,069	41,659	828,107	700,358	39,469	80,717	7,563
Nebraska	44,106	30,947	26,646	0	5,889	95,810	67,351	7,906	20,553	0
New Mexico	6,990,670	4,785,791	132,187	(-)-2,834	315,835	11,589,979	8,273,960	2,351,741	949,026	15,252
New York	64,779	100	0	4,814	2,900	66,793	50,642	0	528	15,623
Ohio	658,862	32,527	8,450	30,696	41,400	689,135	551,825	0	32,800	104,510
Oklahoma	11,634,287	769,182	117,604	10,380	727,116	11,804,337	7,368,214	1,007,720	3,393,654	34,749
Pennsylvania	627,171	38,272	33,000	43,012	122,000	619,455	480,191	0	38,400	100,864
Texas ⁱ	102,404,077	5,311,803	1,854,153	1,330	3,918,134	105,653,229	70,322,632	18,228,896	17,099,881	1,820
Utah	84,752	8,784	6,154	0	3,845	95,845	78,720	0	17,125	0
West Virginia	1,650,675	147,107	21,900	33,817	182,000	1,671,499	1,504,366	0	77,150	89,983
Wyoming	2,194,989	161,115	66,518	179	82,503	2,340,298	1,479,958	354,385	505,263	692
Miscellaneous ^h	27,472	26,419	66,356	0	4,495	115,752	47,913	0	67,839	0
Total	185,592,699	13,013,606	3,039,385	132,751	7,966,941	193,811,500	133,771,407	28,720,715	30,844,937	474,441

^a Includes Alabama, Florida, Maryland, Missouri, North Dakota and Virginia.

^b Excludes gas loss due to natural gas liquids recovery.

^c The net difference between gas stored in and gas withdrawn from underground storage reservoirs, inclusive of adjustments.

^d Net production equals gross withdrawals less gas injected into producing reservoirs; changes in underground storage are excluded. December production estimated occasionally.

^e Non-associated gas is free gas not in contact with crude oil in the reservoirs.

^f Associated gas is free gas in contact with crude oil in the reservoirs.

^g Dissolved gas is gas in solution with crude oil in the reservoirs.

^h Gas held in underground reservoirs for storage purposes only.

ⁱ Includes off-shore reserves.

TABLE 2

ESTIMATED PROVED RECOVERABLE RESERVES OF NATURAL GAS LIQUIDS IN THE UNITED STATES^a

(Thousands of Barrels of 42 U. S. Gallons)

	Changes in Reserves During 1951				Reserves as of December 31, 1951			
	Reserves as of Dec. 31, 1950 (1)	Extensions and Revisions (2)	Discoveries of New Fields and New Pools in Old Fields (3)	Net Production (4)	Total (Columns 6 + 7 + 8, also Columns 1 + 2 + 3 Less Column 4) (5)	Non- Associated (6)	Associated (7)	Dissolved (8)
Arkansas	52,938	(-)-110	80	1,858	51,050	30,326	7,167	13,557
California ⁱ	363,387	(-)-4,596	0	29,475	329,316	0	112,854	216,462
Colorado	12,921	(-)-521	0	490	11,910	301	0	11,609
Illinois	26,259	2,006	28	3,721	24,572	22	50	24,500
Indiana	152	13	17	33	149	18	22	109
Kansas	163,578	(-)-14	330	4,325	159,569	155,367	1,430	2,772
Kentucky	11,927	369	185	2,003	10,478	10,478 ^c	0	0
Louisiana ⁱ	643,512	64,775	9,294	32,808	684,773	540,276	99,303	45,194
Michigan	1,018	89	1	99	1,009	595	0	414
Mississippi	55,897	47	995	4,649	52,290	25,750	20,912	5,628
Montana	3,547	79	0	285	3,341	3,341	0	0
Nebraska	235	1,808	666	123	2,586	2,314	169	103
New Mexico	93,897	44,221	661	8,160	130,619	47,842	32,580	50,197
Ohio	1,688	94	11	83	1,710	1,710 ^c	0	0
Oklahoma	279,903	52,715	4,319	25,812	311,125	120,293	27,993	162,839
Pennsylvania	2,599	119	59	214	2,563	2,563 ^c	0	0
Texas ⁱ	2,496,039	470,160	55,702	144,560	2,877,341	1,398,327	391,917	1,087,097
Utah	194	(-)-128	0	5	61	61	0	0
West Virginia	8,976	20,845	282	6,182	23,921	23,921 ^c	0	0
Wyoming	48,987	(-)-3,478	2,543	2,166	45,885	40,623	5,263	0
Miscellaneous ^h	9	4	321	1	333	0	0	333
Total	4,267,663	648,497	75,494	267,052	4,724,602	2,404,128	699,660	1,620,814

^a Includes condensate, natural gasoline and liquefied petroleum gas.

^b Includes Alabama, Florida and North Dakota.

^c Not allocated by types but occurring principally in the column shown.

^d Includes off-shore reserves.

**TABLE 3 SUMMARY OF ANNUAL ESTIMATES OF NATURAL GAS RESERVES
FOR PERIOD DECEMBER 31, 1945 TO DECEMBER 31, 1951**

(Millions of Cubic Feet—14.65 psia, at 60 deg. F)

Year	Natural Gas Added During Year			Net Production During Year	Estimated Proved Reserves as of End of Year	Increase over Previous Year
	Extensions and Revisions	Discoveries of New Fields and New Pools in Old Fields	Total of Discoveries, Revisions and Extensions			
1945	.....	.....	.....	.....	147,789,367	.....
1946	a	a	17,729,152	a	160,575,901	12,786,535
1947	7,570,654	3,410,170	10,980,824	a	165,926,914	5,351,013
1948	9,769,483	4,129,089	13,898,572	51,482	173,869,340	7,942,426
1949	8,061,429	4,612,870	12,674,299	82,746	180,381,344	6,512,004
1950	9,172,381	2,877,351	12,049,732	54,301	185,592,699	5,211,355
1951	13,013,606	3,039,385	16,052,991	132,751	193,811,500	8,218,801

a Not estimated.

**TABLE 4 SUMMARY OF ANNUAL ESTIMATES OF NATURAL GAS LIQUIDS RESERVES
FOR PERIOD DECEMBER 31, 1946 TO DECEMBER 31, 1951**

(Thousands of Barrels of 42 U. S. Gallons)

Year	Natural Gas Liquids Added During Year			Net Production During Year	Estimated Proved Reserves as of End of Year	Increase over Previous Year
	Extensions and Revisions	Discoveries of New Fields and New Pools in Old Fields	Total of Discoveries, Revisions and Extensions			
1946	.....	.....	.....	129,262	3,163,219	.....
1947	192,237	59,301	251,538	160,782	3,253,975	90,756
1948	405,874	64,683	470,557	183,749	3,540,783	286,808
1949	294,211	92,565	386,776	198,547	3,729,012	188,229
1950	707,879	58,183	766,062	227,411	4,267,663	538,651
1951	648,497	75,494	723,991	267,052	4,724,602	456,939

used in the calculations were governed by the operating conditions in each individual field. Proved recoverable reserves of natural gas liquids are those contained in recoverable gas reserves.

For purposes of developing these reserve estimates, natural gas liquids are defined as those hydrocarbon liquids that are gaseous in the reservoir but are obtainable by condensation or absorption. Natural gasoline, condensate, and liquefied petroleum gases fall in this category. In order to prevent misunderstanding of this term it is further amplified as follows: the natural gas liquids are those heavier hydrocarbon components of the natural gas which may be removed and reduced to the

liquid state by various processes. These processes usually take place in field separators, scrubbers, gasoline plants, or cycling plants. The liquids so collected and the products made from them in some of the modern plants are known by a variety of names but they have been grouped together here under the general heading "natural gas liquids."

The estimates presented in this sixth annual report incorporate the results of careful detailed studies of many hundreds of fields and pools throughout the United States. Their preparation has required the help and active cooperation of specially trained geologists and engineers familiar with the developments in all producing areas throughout the country.

(Continued on page 4)



(Thousands of Cubic Feet)	
Total proved reserves as of December 31, 1950	185,592,699,000
Extensions and revisions of previous estimate	13,013,606,000
New reserves discovered in 1951	3,039,385,000
Net changes in "stored gas" during 1951	132,751,000
Total proved reserves added and net changes in "stored gas" during 1951 ..	16,185,742,000
Total proved reserves as of December 31, 1950 and additions during 1951 ..	201,778,441,000
Deduct production during 1951	7,966,941,000
Total proved reserves of natural gas as of December 31, 1951	193,811,500,000

Reserves data are shown by states in Tables 1 and 2.

Increase
over
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Year

.....
786,535
351,013
942,426
512,004
211,355
218,801

Increase
over
Previous
Year

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88,229
538,651
456,939

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● George F. Mitchell—Born March 20, 1888, died March 26, 1952 ●

A.G.A. president dies suddenly

George F. Mitchell, president of American Gas Association, and president, The Peoples Gas Light & Coke Co., Chicago, died suddenly on March 26.

One of the gas industry's outstanding leaders for decades, Mr. Mitchell was elected A. G. A. president at the Annual Convention in St. Louis in October, 1951. Prior to his election, he had served as Association first vice-president during 1950-51; second vice-president and chairman of the Manufactured Gas Department during 1949-50; and as a director for many years.

Mr. Mitchell served on many important committees and at the time of his death was active on several of them. He was chairman of the Executive Committee of the Board. He was a member of the Executive Board, the Special Committee on Appliance and Equipment Exhibits, the Advisory Committee on Gas Home Study Courses of Illinois Institute of Technology, the Laboratories Managing Committee and the Manufactured Gas Department's Nominating Committee.

Born on March 20, 1888, Mr. Mitchell was educated at a business college and at the Armour Scientific Academy in Chicago. In 1909 he entered the public utility field as a stenographer in Commonwealth Edison Co.'s new business department, and in 1913 became secretary to the president of

that company, Samuel Insull.

Mr. Mitchell was named assistant to the president of The Peoples Gas Light & Coke Co. in 1919 and was elected treasurer in 1921, one of the youngest men ever chosen an officer of the company. Three years later in 1924, he was named vice-president in charge of finance, the position in which he served until 1930, when he was named president of the company.

During his years at the helm of The Peoples Gas Light & Coke Co., Mr. Mitchell guided the utility in aggressive sales promotion. He was largely responsible for bringing natural gas to the Chicago area, and has been credited with introducing the now widely used therm rate in this country.

Active in the civic affairs of Chicago, Mr. Mitchell was for many years chairman of the quota committee of the Chicago Chapter, American Red Cross, a member of the Chicago Club and the Chicago Athletic Association.

In addition, Mr. Mitchell was vice-chairman of the Natural Gas Storage Co. of Illinois, a director of Natural Gas Pipeline Co. of America, the Texas Illinois Natural Gas Pipeline Co., the Chicago and Illinois Western Railroad, Chicago District Pipe Line Company.

Mr. Mitchell is survived by his widow, Elizabeth; two daughters, Mrs. Jean Anderson and Mary; two brothers, William and Warren, and a sister, Mrs. Anna Logan.

With industrial demand exceeding mining output, a natural gas company finds it profitable to extract

Sulphur from waste gas

By GORDON A. CONNELL

*Chief Petroleum Engineer,
Royalite Oil Company, Ltd.*

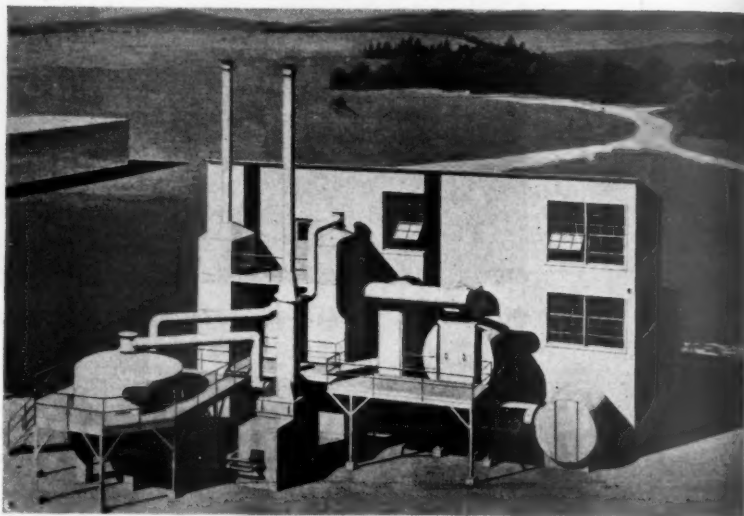
and ROBERT V. JONES

*Design Engineer
Foster Wheeler Corporation*

Formerly wasted hydrogen sulphide gas will be used to produce 30 long tons of elemental sulphur per day in a new plant being erected by Royalite Oil Co., Ltd., Calgary, Alberta, Canada. Heretofore this gas was isolated and exhausted into the atmosphere during the process of cleaning wet gas before distributing to consumers. Scheduled to commence operation this month, the sulphur recovery plant is being installed near the Turner Valley, Alberta, plant of Madison Natural Gas Co., Ltd., a Royalite subsidiary.

The Madison gas gathering system comprises some 67 miles of line which transports wet gas from 195 Turner Valley wells to the processing plant. The processing plant cleans the gas in a Girbotol Unit which uses a monoethanolamine (MEA) solution as an absorption medium. The solution absorbs the hydrogen sulphide and carbon dioxide in the wet gas, after which the clean gas is distributed to consumers by the Canadian Western Natural Gas Co., Ltd., a local distributing company. The gathered gas is raised in pressure from 90-125 psig. to 335 lb. by means of ten Cooper-Bessemer compressors totalling 5720 hp. at an altitude of 4000 feet in Turner Valley or 6600 hp. at sea level. This is

Abridged version of an article in the *Heat Engineering*, published by the Foster Wheeler Corporation.



Artist's Conception of sulphur recovery plant being installed by Royalite Oil Company, Canada, near Alberta's Turner Valley wells. Plant utilizes formerly wasted product.

the largest compressor station in Western Canada.

The MEA absorber-solution is regenerated by boiling off the H_2S (hydrogen sulphide) and CO_2 (carbon dioxide) which is released as a waste to the atmosphere. The regenerated solution is returned to the absorber.

Due principally to climatic conditions, Royalite's gas operations vary from a flow of 100 million SCF per day in winter to 30 million in summer with an additional 15 percent daily variation.

The waste gas analysis by volume dry basis is approximately 40.2 percent H_2S , 56.8 percent CO_2 , and 3.0 percent hydrocarbon. The gas to the sulphur recovery unit flows at 10 psig. saturated at 80 F. For a capacity of 30 long tons per day sulphur equivalent, this represents a de-

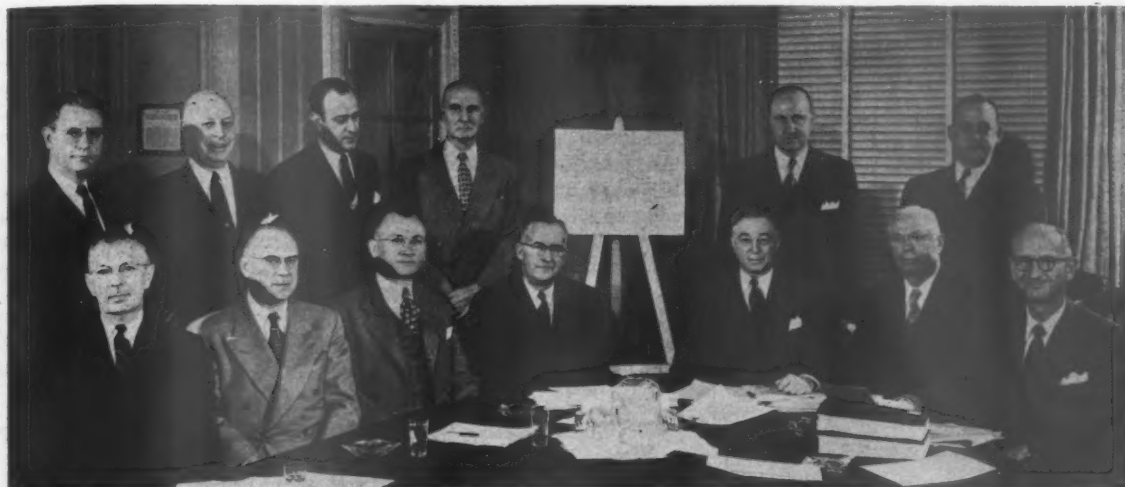
sign acid gas capacity of 2,130,000 SCF per day.

The removal of these gases from the natural gas is required since hydrogen sulphide in the concentration existent in the natural gas is extremely poisonous and is a serious hazard to human and animal life by causing paralysis of the nervous system. Government regulation for this reason prohibits the sale or use of unscrubbed natural gas containing H_2S as a fuel.

For many years research chemists and chemical engineers, cognizant that hundreds of tons of sulphur were being released to the atmosphere, set out to find a profitable way of recovering this valuable element. Chemists had known for some

(Continued on page 41)

Pick vital convention themes



Present when the A. G. A. General Convention Committee met to chart the General Sessions of the 34th Annual Convention, were: seated, l. to r., Jesse L. Johnson, Charles M. Sturkey, Frank H. Trembly, Jr., Kurwin R. Boyes, Chairman F. A. Lydecker, Earl Smith and W. M. Jacobs; standing, l. to r., Cliff Hall, Eugene D. Milener, William Greene, George A. McDonald, E. L. Henderson and Harold Massey

Subjects of vital importance to all members of the gas industry have been selected for the general sessions programs of the 34th Annual Convention, American Gas Association, Atlantic City, N. J., October 27-30, 1952. At a recent New York City meeting of the General Convention Committee of A. G. A., under the chairmanship of F. A. Lydecker, Public Service Electric & Gas Co., Newark, N. J., members agreed upon a list of seven subjects that are uppermost in the minds of gas industry leaders. Distinguished speakers from outside the industry and within its ranks will cover these subjects thoroughly.

A cross-section of the gas industry was represented at the meeting, with delegates from Seattle, Los Angeles and Shreveport augmenting the attendance of members from New England, and the closer metropolitan areas of Newark, Philadelphia, Atlantic City and New York. Thus industrywide thinking was behind the selection of the important subjects. Among important subjects tenta-

tively scheduled are: "Earnings Needs of the Gas Industry;" "New Plans and Decisions of Regulatory Agencies;" "Servicing Responsibilities of Gas Utilities;" "Strong and Weak Points of the Gas Industry;" and in rebuttal, "The Dealer Merchandising Plan Proposed by A. G. A.'s General Promotional Planning Committee;" "Public Relations of the Gas Industry;" and a presentation on the petroleum industry and its future.

Opens with joint session

The convention will open with a joint Monday morning meeting of the A. G. A. Natural Gas and Manufactured Gas Departments. In addition to routine business and reports, the program will include addresses by informed speakers.

General sessions will be held at the Auditorium Monday afternoon and Tuesday and Thursday mornings. The committee voted to schedule fewer addresses than in some former years, but to intensify the importance of the subjects and allow more time to see the exhibition.

In this way, meetings will be kept within the two hour limit, but will offer delegates an abundance of worthwhile information.

Sectional conferences are being scheduled by the Residential Gas Section, the Operating Section, the Industrial and Commercial Section and the Accounting Section on Tuesday and Thursday. Details of these meetings will be announced later. The Accident Prevention Committee will hold a meeting at which all delegates interested in safety will be welcomed. A luncheon and meeting of the Corporate Secretaries is being scheduled. The Home Service Round Table Luncheon and Conference will be held on Tuesday noon, October 28th. The Home Service Breakfast will be held Wednesday morning, October 29th as announced.

Gas appliance manufacturers are investing nearly a million dollars in the greatest exhibition of gas appliances and equipment ever to be assembled at the

(Continued on page 43)

New fryer triples food output

a PAR activity

Techniques for advanced deep fat fryer design, tripling the amount of useable heat commonly available for food frying, are presented in a new research bulletin to be released soon by the American Gas Association Laboratories. An experimental fryer, built in accordance with design fundamentals explored during the course of research, verified the validity of the work. Practical design relationships developed are explained fully in the bulletin.

The experimental fryer was developed under the research program sponsored by the Committee on Industrial and Commercial Gas Research under the Association's PAR program. It proved to be capable of more than tripling the useable heat production of most contemporary gas fryers as well as excelling over electric fryers. Many existing gas fryers were found to operate normally with loads having a fat-to-potato weight ratio of eight-to-one with cycle times averaging 10 to 12 minutes. By comparison the ex-

perimental fryer achieved a six-to-one ratio with a four and a half minute cycle time. A complete cycle comprises frying time plus recovery time for the fat to return to starting temperature.

Determination of the amount of useable heat provided by various fryer designs was found to be the only suitable method of comparing fryers. Useable heat is defined as that heat which is available for food frying on the fat side of the kettle after flue, jacket, kettle and other losses have been subtracted. Transfer of heat from the burners to the frying kettle, through the kettle walls to the fat, and from the fat to the food is technically an intricate process. The numerous individual factors influencing each of these steps were isolated, analyzed, and related in over-all, practical design procedures. Alignment charts for such factors as fryer performance, kettle surface area, and heating speed were developed to simplify fryer design and analysis.

Useable heat obtained in the experimental fryer achieved a value of 1,500 Btu per pound of fat. This compares

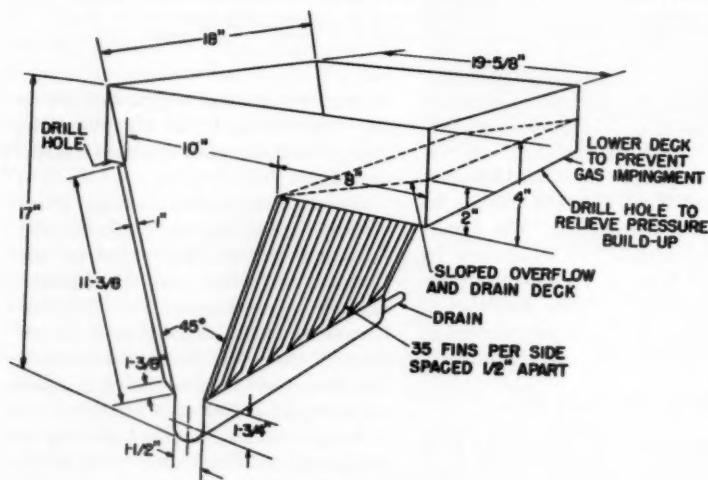


Fig. 1. Fins attached to the kettle's exterior increase transfer of useable heat by nearly nineteen thousand Btu per hour

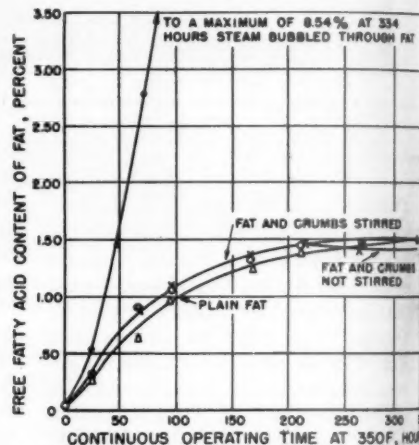


Fig. 2. Fatty acid was formed by the combining of steam from food moisture with the fat

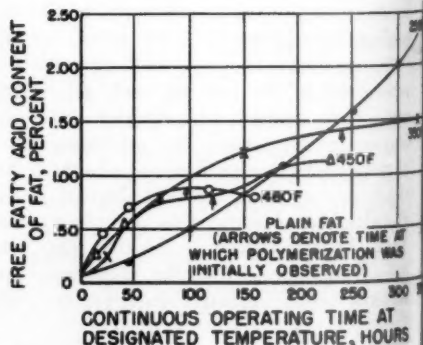


Fig. 3. A second chemical reaction at higher temperatures speeds the using up of fatty acids

with a value of 1,000 to 1,350 Btu per pound of fat for well designed and efficient electric fryers and is several times the figure for many present gas fryers. The experimental fryer was designed to hold 32 pounds of fat and to operate with a gas input up to 70,000 Btu per hour with a frying efficiency of 60 percent or more.

In one bench test, 77 pounds of potatoes per hour were produced in single step frying. This production probably is high for ordinary commercial frying, but potato outputs of 70 pounds per hour are deemed readily possible. In two step frying, the capacity of the fryer to brown potatoes in the final stage may be as high as three hundred pounds per hour, or enough to serve six hundred persons per hour. Allowing a minute and one-half to brown each load, the load would be seven and one-half pounds or nearly the basket capacity of this particular fryer.

The fryer was designed for heavy duty operation. Potatoes were used as a work criterion because they represent the most severe type of load, requiring from 550

to 650 Btu per pound of raw weight. Heavy duty frying is the continuous processing of heavy loads of food to completion in the minimum time for that food. Severe loads pose a difficult design problem because they require delivery of a high heat input to a small volume of food immersed in a small volume of fat. Foods that require little heat, large fat volume, and large heating surface area, such as doughnuts, present no great difficulty. The design information developed, however, is applicable to the building of any type of fryer desired.

Key to the improved performance and excellent results obtained was found when the part played by kettle surfaces in transferring heat from the gas to the fat side of fryers became clear, and accurate means of isolating and calculating such transfer were devised.

Conventional, flat kettle surfaces were found to be capable of transferring not over 13,600 Btu per hour per square foot of area to the fat. The practical limit was closer to ten thousand. This figure falls far short of that required for compact

design. It would require some 5.7 square feet of fat-backed gas-side transfer area for optimum effectiveness.

The problem was solved by attaching fins to the outside of the kettle to increase the gas-side surface area. These are shown in Figure 1. They increased heat transfer by an average of 320 Btu per hour per foot of fin. In the case of the experimental fryer, 65 feet of fins, 35 fins to each side, were employed. These increased the total usable heat to the kettle by nearly nineteen thousand Btu per hour. Because heat transfer on the fat side was found to be about ten times that on the gas side, no fins are necessary inside the kettle. Thus, a smooth easily cleaned kettle surface is retained.

Higher spot temperatures on kettle surfaces than formerly considered satisfactory from the standpoint of fat breakdown resulted from increasing the heat transfer to the fat. However, a comprehensive study of fats, made in connection with the project, disclosed that high spot temperatures actually do not have a detrimental effect. Actually maximum wall

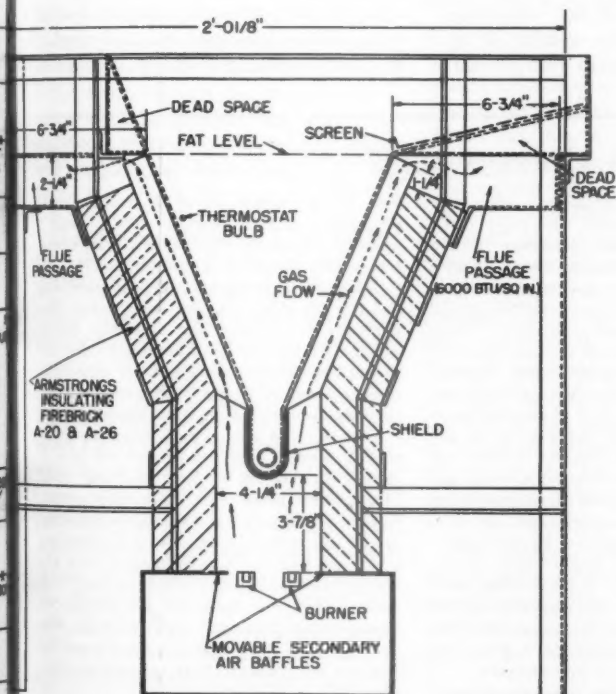


Fig. 4. An outstanding feature is the firebrick combustion box which allows the burner to be lowered until there is no danger of flame impingement on the kettle, while retaining high heat transfer efficiency

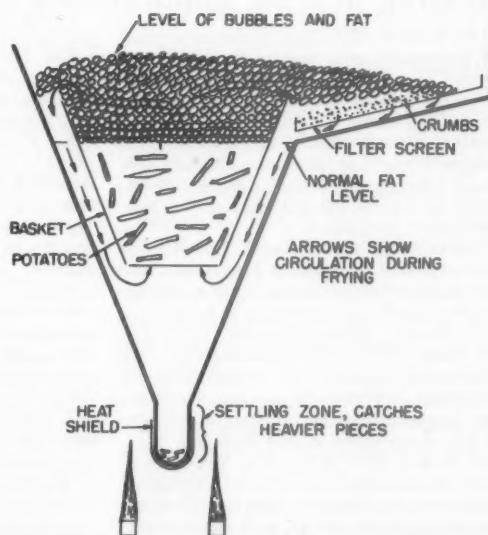


Fig. 5. The natural violent bubbling and rise in level of the fat, when a load of food is placed in it, is used to bring up the crumbs and deposit them on a screen

temperatures in the range of 650° to 700° F may be employed without causing excessive fat deterioration rates. Hot spot temperatures of that magnitude are permissible, it was found, because the fat in contact with hot spots is quickly cooled upon being swept away in a current of circulating fat. The rate of free fatty acid accumulation was found to be only 1/375th of that obtained when the entire fat sample was heated to 650 degrees.

The common assumptions that fat deterioration increases steadily with temperature rise and that a similar effect results from the presence of crumbs in the fat could not be verified. Formation of free fatty acid took place most readily simply from the cooking process itself, moisture in the food being turned to steam which combined with the fat to form free fatty acid. This is shown in Figure 2. It will be noted that crumbs, both stirred and unstirred, did not cause fatty acid to accumulate any faster than in the plain sample. In Figure 3 the effect of temperature is shown. The 480° sample had the lowest per cent of acid. Apparently, at this higher temperature, there must be a second chemical reaction which uses up the fatty acid faster than at lower temperatures.

Figure 4 shows the general construction of the fryer. One of its features is the firebrick combustion box. Its use

allowed the burner to be lowered until there was no danger of flame impingement on the kettle, at the same time retaining a high heat transfer efficiency. Introducing air in the center of the burner caused the flame to burn along the bricks, avoiding direct heating of the shielded settling zone. The type of burner employed, such as drilled port or ribbon, is not critical to the application. A reasonably high primary aeration is required to insure a low, compact flame. The burner ports should extend the full length of the kettle to spread the flame over as wide an area as possible to avoid excessive hot spots and reduce flame height.

While crumbs in the fat do not cause accelerated fat deterioration, they do come to rest on heated surfaces where they may char and redeposit as black specks on the food. Thus it is still necessary to remove them although not necessarily by a cold zone. A cold zone requires more fat capacity which mixes cold fat with hot fat during frying to lower the temperature and increase frying time. It is also inaccessible and difficult to clean.

Use of a settling or sedimentation zone, augmented by other methods for screening or filtering out crumbs probably would have decided advantages. Figure 5 illustrates the working of such an arrangement. When a load of food is

placed in the fat, the natural, violent bubbling of the fat that takes place is utilized. This bubbling is accompanied by a strong circulation of fat in the fryer as well as a rise in the fat level. The crumbs are carried up and are lifted over the heat insulated splash deck and deposited on a screen where they can be easily removed without interference with the frying procedure. The only operating precaution necessary is to maintain the fat level properly.

The experimental model was demonstrated to manufacturers of fryers during a seminar held at the Laboratories. They were enthusiastic about the possibilities it opens for improved fryer performance and the wealth of design information developed. To cooperate with them towards the building of improved commercial models, the scope of the investigation has been extended to include testing of new models for research and design purposes.

Results of the investigation are being published in a forthcoming research bulletin, "Design Studies of Gas Deep Fat Fryers." J. C. Anthony, R. A. Siskin, L. V. Cachat and R. L. Stone, of the A. G. A. Laboratories staff, conducted the project which is one of a series on the application of heat to commercial gas equipment. Mr. Stone is largely responsible for the important technical design relationships developed and their translation into a working model of a gas fryer.

Heating and Air Conditioning Council stresses sales

GAS HOUSE HEATING needs promotion" emphasized every speaker at the Metropolitan Gas Heating and Air Conditioning Council's 16th annual meeting, Hotel Statler, New York, March 21. And by the end of the day-long session, each of the council's 225 delegates was convinced that although gas house heating is superior, the utility salesman has to go out and *sell* that superiority to beat very strong competition.

Under the chairmanship of A. J. Hartmann, Consolidated Edison Co. of New York, Inc., the morning session began with a talk by Frank J. Nunlist, Jr., general sales manager of L. J. Mueller Furnace Company. Unity was Mr. Nunlist's theme throughout his talk, "Promoting Gas Heating from a Manufacturer's Viewpoint." Because the gas industry is on the threshold of a great selling opportunity as natural gas arrives in New York, Mr. Nunlist showed how utility and manufacturer alike can capitalize on it only by cooperating with each other. Negative attitudes on the part of utilities, fear on the part of the home owner, strong oil burner competition can be beaten by really strong industry-wide cooperation. But by the same token, each factor could mean the death of gas house heating in the metro-

politan area. Regional campaigns—using television, radio, newspapers, and every other means of advertising and promotion—should be used to promote this unity amongst all metropolitan manufacturers, dealers and utilities.

Mr. Nunlist begged for an effective public relations and educational campaign to bring the A.G.A. approval seal as a symbol of safety back to greater significance in the industry. The A.G.A. symbol is the best nationally accepted way to fight the fear of gas. Every department in the utility can partake in the campaign. Actually, Mr. Nunlist pointed out, carbon monoxide poisoning from coal gas causes more deaths each year than asphyxiation from utility gas. Home service girls are in a perfect position to bring this message to the housewife, erasing her fear of gas. Service men, too, should be thoroughly instilled with the safety message. As understanding grows, the public's fear of gas diminishes. And fear of gas, Mr. Nunlist emphasized, is today one of gas house heating's greatest enemies.

J. A. Gilbreath, assistant vice-president of Servel, Inc., the second speaker, peered into a crystal ball during his address, "What's Ahead for Servel All-Year Air Conditioning." Speaking not only for Servel, but for the entire

field, Mr. Gilbreath told of air conditioning's unobtrusive growth from a small "luxury" industry in the early 1900's to one of the country's great "necessity" industries in 1952.

Today the large market is divided unevenly, and the gas utility industry has a unique opportunity to improve the situation. About ninety-eight percent of all air conditioners installed during 1951 use electricity or a form of energy other than gas. Only two percent of air conditioners sold are gas operated.

However, the gas air conditioner has great economic value to the utility because it is a perfect complement to the winter-time space heating load. The electric utility, on the other hand, is finding air conditioning an expensive service to provide because of distribution problems. Thus, over-all economies favor all-year gas air conditioning to the consumer and utility alike. It is up to the gas industry to promote this favorable load actively. The utilities which have done this are few and far between, but results in their areas are astounding.

A message of concern to the entire nation, but particularly for New York State utility men, was delivered by Charles B. Delafield,

(Continued on page 48)

Annual reports cite '51 gains



Increasing corporate consciousness of investor relations is notable in the greater clarity and broadened detail of the annual reports of gas utilities. Through each 1951 report runs the theme that gas utilities are keeping their heads above the level of rising taxes and operating costs only by sharp scrutiny of expenditures and by materially increasing their sales. Despite lowered inducements to expansion and exercise of free enterprise, the gas industry has broadened its scope and maintained a sound financial position. Excerpts from additional gas company annual reports will appear in later issues of the MONTHLY.

Consolidated Edison Co. of N. Y., Inc., New York—While 1951 operating revenues were nearly \$25 million greater than in 1950, higher taxes and increased operating expenses combined to reduce the gain in net income to a little more than \$5,000. Taxes passed the \$100 million mark in 1951 and took about a quarter of gross revenues. Local, state and federal taxes were all higher.

Gas sales in 1951 were 62 billion cubic feet (expressing natural gas on an equivalent 537 Btu basis), which was an increase of 3.8 percent over the year before. Revenues increased 2.4 percent. All sales classifications increased as to quantities sold and all increased in revenue except residential which declined slightly.

Consumers Power Co., Jackson, Mich.—The rapid strides in natural gas business which represented \$34 million

of the company's 1951 revenues are indicated in the sales of gas for space heating which alone exceeded the company's entire gas revenues two years previous. The gas business has more than doubled since 1948.

Operating expenses rose at a rate corresponding approximately to 1951 revenues, with a rise of over thirty percent in the tax item.

The company and its subsidiary, Michigan Gas Storage Co., invested \$16,468,499 in gas facilities. This was pointed out as the role of the investor-owned utility in the American scheme of things—to expand its facilities as rapidly as the needs of its customers require, keeping itself always ready to meet its customers' needs and its obligation to the nation. Expansion means that additional investor dollars are put to work for the general good. The public benefits through increased manufacturing and farm productivity, the investor through a return on his investment in the form of interest or dividends. It is unnecessary for government to engage in business, with investor-owned utilities meeting the responsibility to expand.

The company spent more than \$56 million last year for the expansion of gas and electric facilities. As part of its post-war construction program, this total will pass the quarter-billion mark in 1952.

The Cincinnati Gas & Electric Company, Cincinnati, Ohio—The industrial re-birth of Cincinnati is partially creditable to the availability of the

fuel and power this utility was able to offer. The annual report is designed to show how the company's planning and development in previous years enabled it to keep up with such growth in the communities served. It also shows how the utility has aided directly in the stimulation of that growth and what its plans are for the immediate future.

The area's growth is indicated by the rise of total wages to \$531 million, up 22 percent over 1950 and industrial employment to 160,000, up 11 percent. Total gas sales of 45.6 billion cubic feet were 20 percent over 1950, while 5,136 customers, a two percent increase, were added.

The biggest day's send-out of gas in the utility's history, 324 million cubic feet, 39 million cubic feet above 1950 peak, occurred on December 16, 1951. The heaviest seven-day send out, December 13-19, was 1,977 million cubic feet.

Delay in delivery of steel has held up the erection of the company's new office building, though work on the building has been resumed. Completion is anticipated in early 1953. At that time, the old office building will be turned over to the City of Cincinnati for a clinic and health center.

Shortages of construction materials have delayed gas transmission pipeline additions for supply of gas to service areas. The result has been a continuation of restrictions by regulatory authorities on additional home heating and limitations on new industrial loads.

(Continued on next page)

Public Service Electric and Gas Co., Newark, N. J.—Increased demand for gas caused the establishment of several new records: Revenues from sales of gas to customers were \$52,150,208, a new record and an increase of 12.14 percent over 1950;

Sales of gas to customers amounted to 54,039,709,100 cubic feet, a new high, and an increase of 15.17 percent over 1950;

An all-time record day's send-out of gas of 312,250,000 cubic feet (520 Btu basis) occurred on December 17, 1951.

Total gas revenues were \$52,438,042, including the \$52,150,208 received from customers. Of this total amount 73 percent was derived from residential customers, 15 percent from commercial customers, 11 percent from industrial customers and the remaining one percent from other sources.

Revenue from sales of gas for residential purposes was greater in 1951, principally due to an increase in house heating installations. At year end there were 65,382 building heating installations in service, an increase of 16,350 over the number in service twelve months earlier.

The company installed the millionth gas meter in its territory on December 20, 1951. A special ceremony (A. G. A. MONTHLY, Jan., '52, page 33) marked the event. Only three other gas companies in the United States have in excess of one million gas meters.

The Connecticut Light and Power Co., Hartford—A \$2,037,360 increase in taxes took 47 cents of each one dollar of increase in receipts from sales of gas, water and electricity. Total taxes were more than two times the dividend on common stock. By way of illustrating the effect of higher federal taxes in per customer terms, CL&P points out that in 1939 federal taxes amounted to less than four dollars per customer, whereas in 1951 they amounted to \$23. Receipts from the sale of gas, water and electricity rose \$4,304,510, or 10 percent, over the preceding year. The total number of customers at year-end was 344,114, an increase of 9,986.

In addition to increased production facilities installed in 1951 to supply the rapidly growing requirements of its customers, the company has scheduled an extensive construction program for the next several years. Part of the increase in its electric generating capacity will be two 5,000 kilowatt gas turbine generators. The CL&P will be among the few utilities in the country using the gas turbine in the generation of electricity.

The Columbia Gas System, Inc., New York—The System's earnings have been maintained by increased volume of sales and increased operating efficiency. But this is no longer possible in the face of further assured rising costs and hence higher gas rates are being requested. The System's operations produced a new high in revenues, 18 percent above 1950, but operating expenses increased 24 percent to more than offset the increased income. Taxes increased 13.5 percent, with federal taxes on income alone representing 59 percent of the 1951 total taxes paid out. Federal income taxes rose 19.2 percent over 1950.

Confronted with rocketing demand for industrial and space heating gas, the com-

pany tapped new gas fields in northern Pennsylvania with a new 167-mile pipeline, and purchased more Southwest and Appalachian gas. In addition, it spent \$73 million for the drilling of wells and the construction of production, transmission, underground storage and distribution facilities to make larger quantities of gas available to its customers.

Niagara Mohawk Power Corp., Syracuse, N. Y.—Substantial progress was made during 1951, the second year of the company's operation. Revenues increased and, despite increased taxes and other expenses, 1951 earnings exceeded those of 1950.

About one-hundred and ninety-six thousand customers, almost two-thirds of those on the company's lines, were converted to natural gas in 1951. About sixty miles of additional natural gas transmission lines and sixty miles of distribution lines were constructed in 1951. Construction of a fifty-five mile natural gas line from the company's Syracuse-Oswego line to the Watertown area in northern New York state is planned for 1952.

The company's gas business improved substantially in 1951. Sales, revenues and customers made record increases over 1950, chiefly as a result of the conversions of additional manufactured gas service to natural gas. Total gas sales were 27 percent above 1950, gas revenues were 17 percent greater, over fourteen-thousand new space heating installations were made and the total number of gas customers rose by four-thousand and five-hundred.

The Gas Service Co., Kansas City—In spite of the most devastating flood ever to hit the community, the company recorded a successful year. Domestic gas customers reached a new all-time high, with gas send out for domestic use increasing 12,548,142 Mcf. over 1950. Sales reached 183 Mcf. per domestic customer.

Expenditures of \$6,551,210, for construction and the acquiring of properties, represented a new high in this type of outlay by the company. Most of the expenditure went for mains, services and other materials for expansion and improvement of service, as well as for post-flood rehabilitation.

A total of 22,793 domestic customers, or 5.9 percent were added, to make a gain second only to the 23,290 added in 1947. Industrial customers increased 20.6 percent to bring the total to 743. Domestic gas sales for 1951 were 74,702,433 Mcf., which was 20.2 percent higher than the 12,548,142 Mcf. of sales in 1950.

While domestic gas sales have reached new heights, industrial gas sales decreased 5,534,075, or 10.6 percent in 1951 as compared to the preceding year. This was due to the frequent necessity of interrupting industrial service during the cold winter, and the closing of industries during the flood.

The Peoples Gas Light and Coke Co., Chicago—Outstanding achievement for 1951 was the completion on schedule of the 1,417-mile natural gas pipeline from the Rio Grande Valley, Texas, to the Chicago area by Peoples' subsidiary, Texas Illinois Natural Gas Pipeline Company. The present

line, of three-inch diameter over most of its route, has a daily capacity of 383,350,000 cubic feet of 1,000 Btu gas.

Future plans—based on intensive research and testing—call for establishment of an underground storage field about fifty miles south of Chicago. The 24-square-mile field has an estimated 90 billion cubic feet capacity. Longer range future plans call for expansion of present pipeline to 537,100,000 cubic feet daily capacity.

Thirty-thousand gas space heating customers have been added to the system, and Peoples Gas still has more than seventy-five thousand potential single-family dwelling customers on its waiting list.

United Gas Corp., Shreveport—The consolidated operating revenues of the system amounted to \$125,666,160 in 1951, an increase of \$19,013,603 or 17.8 percent over 1950. The consolidated net income for the year 1951, applicable to the common stock, amounted to \$18,312,946, an increase over 1950 of \$1,585,508 or 9.5 percent.

The demand for natural gas continued at an unprecedented rate. Natural gas sales for 1951 amounted to 690 billion cubic feet, an increase over 1950 of 94 billion cubic feet. Natural gas reserves connected to the system were increased during the year by the development of properties owned, by new discoveries and by contracting for the purchase of additional gas.

At the end of the year, natural gas was moving into the system from fields located more than twenty-five miles out in the Gulf of Mexico, and nearly half of the more than one-thousand miles of large diameter pipeline being built as a grid over the present system was completed. It is anticipated that the current expansion program will be completed by the middle of 1952.

Texas Gas Transmission Corp., Owensboro, Ky.—Operating revenues during 1951 amounted to 28 percent more than for 1950. In the face of this, net income remained the same as the previous year, due to sharply higher taxes and increased operating costs. The Texas gas tax bill was more than fifty percent higher in 1951 than in 1950, with total tax payments to local, state and federal governments amounting to \$2.55 for each share of outstanding common stock, against \$1.67 in 1950.

New facilities constructed during the year included a 181-mile supply line linking gas-gathering subsidiaries in southern Louisiana with the main transmission system in the northern part of the state.

Demands for natural gas in the company's service area from Louisiana to Ohio continue to grow rapidly. Sales amounted to 177 billion cubic feet, compared with 140 billion cubic feet the previous year. To meet this steadily rising demand, a \$33.7 million pipeline expansion program, planned for 1952, will increase daily delivery capacity by more than one-third.

American Natural Gas Co., New York—Chairman William G. Woolfolk takes issue with the Council of Economic Advisers' advice to President Truman that "the economic limit of taxation has not been reached."

(Continued on page 42)

*While wages, materials and fuel costs skyrocket,
residential gas rates remain stable at pre-inflation level*

Gas rates lag as costs rise

● Abridged version of an address prepared by the late George F. Mitchell for delivery at the New England Gas Association annual convention, March 27-28, 1952. Due to Mr. Mitchell's sudden death, March 26, his paper was presented by Earl H. Eacker, president, Boston Consolidated Gas Co. and vice-president, A. G. A.

Gas utility companies must have higher rates to offset rising operating costs if they are to continue to serve the public efficiently. While the U. S. Bureau of Labor's Cost of Living Index at the end of 1951 stood at 189.1 percent of the 1935-1939 average, the average cost of residential gas service on the same date stood at 103 percent of its 1935-1939 base. While living costs in general rose nearly 90 percent, the cost of gas to residential customers gained only three percent.

The American Gas Association has studied the cost trends affecting gas utility operations. These studies point up the need of higher rates by the majority of gas utility companies, almost immediately. Labor costs for the gas utility industry in 1940 totaled about \$249 million. In 1950, the total payroll of the gas industry was \$622 million. In 1940, the average wage of gas utility employees was \$1,730 per year. In 1950, it had risen to \$3,530 per year, an increase of more than one hundred percent in ten years.

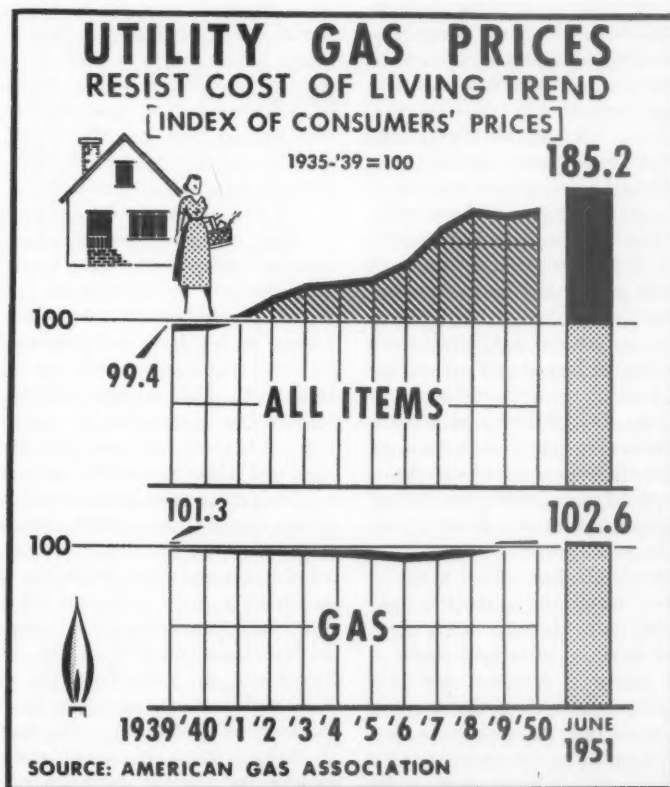
Manufactured gas companies probably have felt the impact of increased operating costs more than natural gas or mixed gas companies. Increased prices at the wells and rising labor and construction costs of natural gas companies are rapidly altering this picture.

Cost comparisons of materials needed to manufacture gas show why many manufactured gas companies changed

to natural gas or mixed gas distribution. In 1945 the gas utilities paid \$6.90 per ton as the average cost of solid fuels used in manufacturing gas. By the end of 1950 the average cost of these solid fuels was \$10.80 per ton. In 1945 the average price of oil for gas making was 4½ cents per gallon. In 1948, the average cost of oil was up to 8½ cents per gallon. In 1950 the average price was down to six cents per gallon, partly because of a new gas

making process developed under the A. G. A. gas production research program. This enabled gas utilities to use low-cost bunker oils in making gas. However, some gas utility companies pay as much as 13 cents per gallon for superior grades of fuel oil for gas making today.

Total fuel costs for manufacturing gas in 1940 amounted to 5.4 cents per therm compared with 7.5 cents per therm in 1950. Fuel costs rose 40 per-



While the consumers' price index of the Bureau of Labor Statistics rose more than 85 percent, the average residential gas rate remained virtually unchanged

cent in ten years. The total fuel and labor bill of gas utilities for 1940 was about \$531 million. In 1950 the same costs totaled more than \$1,307,000,000. This was a gain of 146 percent in two of the major operating costs of manufacturing gas in ten years.

Natural gas and mixed gas companies also are combatting rising costs in labor, materials and taxes. They also are affected by the deflated value of the dollar. Today they face higher financing costs when they have to raise funds for expanding plant and facilities. One of our companies obtained new money at 2.83 percent interest in January, 1951. Today, companies in the same bracket are paying around 3.45 percent for borrowings.

Several important manufactured gas companies converted to natural gas distribution in the past few years to escape from the inevitable rising cost of gas making fuels. But the savings effected through lower manufacturing and distribution costs through conversion are being dissipated as the cost of natural gas to the gas utility company is rising steadily. Natural gas producers and pipeline companies have encountered increased costs of doing business that they must pass along to their customers, the transmission or distributing companies.

Louisiana, Oklahoma, Texas and some of the other gas producing states have imposed production taxes on all natural gas or oil drawn from wells. These taxes are in addition to the millions of dollars of federal, state and local taxes paid yearly by gas producers. Some states have initiated gathering taxes for natural gas; other states propose similar imposts on natural gas produced within state boundaries.

Producers find drilling and exploration costs, so necessary if our natural gas reserves are to keep ahead of sharply increased production, have risen sharply. The average cost of a wildcat, a well driven in an unproved area, is about \$90 thousand. There is about a one-to-nine chance of recovering the \$90 thousand, and only about a one-to-forty chance of making a substantial profit.

Many producers feel that low field prices discourage conservation. Fair prices are needed to compensate producers for gathering the casinghead gas which formerly was flared at the wells. A few years ago producers averaged about 60 cents per well per day for

gathering casinghead gas. Greatly expanded markets and huge pipeline systems today make it profitable to transport this casinghead gas to distant markets. The volume of flared or wasted gas today is less than 10 percent of total production at those fields where it formerly was burned.

The pipeline companies are facing sharp rises in operating and construction costs. New pipeline systems are stretching across the nation, further and further from the source of supply. Costs of delivering gas increase in direct proportion to the distance the fuel is transported. The cost of constructing pipelines has increased more than 85 percent during the past ten years. Companies that figured an average cost of \$1,000 per inch-mile for pipeline construction in 1941 now have to estimate between \$1,850 to \$2,500 per inch-mile for similar lines.

Well-head prices up

Ten years ago well-head prices for natural gas averaged $4\frac{1}{2}$ cents per Mcf. Today new contracts call for 12 cents and 13 cents per Mcf. Although the long-term average field price is about six cents per Mcf. because of the many older contracts still in effect, pipeline companies find it impossible to purchase gas on new contracts at less than 10 cents per Mcf. One large producer has set 15 cents per Mcf. as its field price on future contracts.

The Federal Power Commission has pending rate increases petitioned by pipeline companies totaling more than \$100 million, in addition to rate increases granted in 1951. Pipeline companies, as yet, have not passed along all increased costs to the gas utility companies. The average cost of gas sold to gas companies for resale has risen only from 16.8 cents per Mcf. in 1946 to 17.25 cents per Mcf. in 1950.

This average can be expected to increase sharply. Gas utility companies converting to natural gas now are located great distances from the fields and must pay for increased transmission costs. New areas are to be opened in New England and in the Pacific Northwest, far away from gas fields. New high prices on contracts for these markets will lift the national average. Escalator clauses in recent contracts calling for specific increases of two cents or more per Mcf. at stated intervals like five years, will tend to lift

the average cost to utility companies.

The problem of rising operating costs is not geographical. The gas industry as a whole is feeling the impact of higher wages, higher cost of materials, and higher taxes. For instance:

The Washington (D.C.) Gas Light Co. stated in petitioning for a rate increase that through converting to natural gas it had avoided large capital expenditures for plant expansion. It had eliminated inflationary rises in costs of coal, oil and other gas making materials. By retarding operating costs it had succeeded in holding gas rates for ten years at the 1942 level.

Today higher wage levels, higher taxes and price increases on materials have more than offset economies effected through conversion to natural gas. The wholesale cost of gas to the Washington company was increased last year by nearly one million dollars. The company's supplier has petitioned another rate increase that would add another \$800,000 to fuel costs. The company was caught in a squeeze and had to apply for a rate increase to permit a fair return on money invested in the company.

The Peoples Natural Gas Company of Pittsburgh faces increases of more than two million dollars in operating costs. The increased costs include \$1,133,000 rise in the price of gas purchased from southwestern areas; \$830,000 in additional federal and state taxes; \$230,000 increase in cost of local gas purchases; and about \$250,000 a year in additional payroll costs. The company is petitioning for an over-all increase of about 18 percent in average residential and commercial rates over the 1941 average.

Since 1941 the company points out, consumer prices of bituminous coal have jumped from \$5.10 per ton to \$10.60 per ton in the Pittsburgh area. This is a gain of 107.8 percent. Egg coke has risen from \$8.25 a ton to \$18.50 a ton, an increase of 124 percent. Fuel oil has risen from 7.5 cents per gallon to 13.15 cents per gallon, a rise of 75 percent. Against these increased costs of competitive fuels, the gas company asks 18 percent increase.

Inequities in competitive prices of household fuels have created heavy demands for gas services on companies like The Ohio Fuel Gas Co., Columbus, Ohio. The company estimates it

(Continued on page 43)

General adoption of uniform and practical standards can be beneficial to gas industry and consumer

Emphasize installation standards

By C. GEORGE SEGELER

Utilization Engineer
American Gas Association

Since all of us, as taxpayers as well as utility men, are audibly groaning about the present extent of restrictive legislation—actual, pending and proposed—it may seem odd that we should be urging more of the same. Yet, we should do that very thing for two purposes, each of which should prove of great benefit to the gas industry and to its customers, the taxpayers.

The new gas installation standard is new in the sense that it is complete, up-to-date and preeminently practical. We have had standards before, but they lacked these features and as a consequence they were adopted to a rather limited extent. The new standard, on the other hand, has these advantages and consequently its adoption into local and state ordinance has been surprisingly rapid in many localities. Most of the larger cities in Wisconsin, including Milwaukee, scattered cities throughout the South, the State of New York plus 15 communities in New York state, Philadelphia, Pa., and Fairfax County, Va., have adopted it.

The larger cities in the United States have building codes which include to a greater or lesser extent some clauses referring to gas. The smaller communities rarely have such inclusion but in any event the clauses are not uniform and they are not up-to-date, save but a few instances. But there are in the United States 1,250 utility companies who reach into

8,000 communities and in addition there are large areas in which LP gas service is also involved. This large number of individual communities is the basic argument for the adoption of a single nationally recognized standard rather than the adoption of individual building codes conceived exclusively with reference to local needs.

AGE OF BUILDING CODES IN THE UNITED STATES*

Age Group	Number of Cities	Percentage
Up to 5 years	574	27
6 to 10 years	366	17
11 to 15 years	244	11
16 to 20 years	377	18
21 to 25 years	327	15
Over 25 years	264	12
Total	2,152	100

* Survey 1949 by U.S. Bureau of Standards.

Building codes are essentially an exercise of the authority of a state. The actual requirements are usually local in character by virtue of delegation of the state's power to the municipality either through charter provisions or special enabling acts, but the power itself is of state origin. This is an important point to bear in mind since there is a growing tendency for states to exercise this power. Right now such activity is under way in New York, California, Wisconsin, Arizona and possibly elsewhere.

Having presented the argument in favor of a modern code it also may be well to consider a contrary viewpoint. Some have said that it is an advantage not to have the gas industry restricted or ham-

pered by gas codes. It has been reasoned that the absence of legislation is beneficial since installation costs are reduced through greater freedom of choice of methods, and since there are no permits or fees.

Furthermore, a very significant point is raised in the argument that gas companies serving a large number of communities are not troubled in the administration of their service departments by local requirements which might be inconsistent or even conflicting in character. The effect of conflicting codes upon the efforts of sales and service departments speaks for itself.

All of this could very well be true if it weren't for two stubborn facts that keep interfering with such a comforting, though possibly specious line of reasoning. The first of these facts is the matter of public safety, which has been receiving considerable attention in the public press, the radio and, in many cases, from the authorities. The second fact, whether we like it or not, is that there already are so many numerous indirect controls over the manner of installing gas and its equipments. With these two points in mind it would seem that we might as well take the bull by the horns and urge the adoption of a single acceptable and universal standard for the installation of gas piping and appliances.

To go into the matter of public safety in a little more detail, A. G. A. asked the U. S. Public Health Service to prepare a transcript of the microfilms of the certificates of death in which gas was involved. These data for the years 1947, '48 and '49 were confined to Account No. 178A in the International Classification of the Causes of Death which is the category

Abridged version of an address before New England Gas Association annual convention, Boston, March 27-28, 1952.

covering accidental deaths from utility gas. The A. G. A. Statistical Department then applied population estimates to these data. This gave a fatality index which could be used to compare communities with different populations, and which might serve as some measure of the value of any steps taken to improve consumer safety.

Any utility company can secure such information for their own territories comparing the local fatality index per 100,000 of population against the median figure for companies of similar type. To be sure this is only a start since data is now available only for three years. However, A. G. A. plans to continue these studies and in time the validity of the median figure will become more firmly established.

MEDIAN FATALITY INDEX		
Type of Company		Index
16 natural gas companies serving between 50,000 and 100,000 population		0.00
24 natural gas companies serving between 100,000 and 500,000 population		.40
9 natural gas companies serving over 500,000 population		.47
10 mixed gas companies		.50
24 manufactured gas companies serving between 50,000 and 100,000 population		2.00
23 manufactured gas companies serving between 100,000 and 500,000 population		1.50
9 manufactured gas companies serving over 500,000 population		1.10

If the enforcement of better installation practices helped companies with indexes above the median to improve their results, substantial contributions to public safety would be chalked-up to our credit.

This assumes that there is a correlation between public safety and the enforcement of a gas code. Such a relationship might be hard to prove because statistics are lacking but it certainly seems logical. If that is so we now can say that we have an effective gas code, the adoption and enforcement of which will help greatly in achieving our desired aims.

Today many gas utility men are thinking primarily about natural gas, which being non-toxic should automatically have the effect of eliminating all but a very few deaths from leaking gas or unburned gas.

The natural gas fatality index *primarily* then is an index of incomplete combustion; that is, largely an index of the venting practices. There are some gas accidents resulting from gas leaking into

buildings, which are put into a different category in Health Department Statistics. They are, therefore, not included in the U. S. Public Health figures in Account No. 178A. But with this omission in mind the median fatality index for natural gas companies is markedly lower than that for manufactured gas. There has, therefore, been some tendency to look forward to the change to natural gas as the solution of the entire problem of consumer safety where manufactured gas was formerly used.

That this is not valid can be accepted when the details of the natural gas picture are studied. There are individual natural gas operations with a fatality index well above the comparable median for a manufactured system so that while we may conclude that there is likely to be a big improvement from the introduction of natural gas, it may not completely solve the problem of consumer safety. Part of the great improvement following the change-over should be attributable to the fact that every individual burner has been given competent attention in the process of preparing for the coming of natural gas. To assure the performance of this improvement, consideration should be given to the benefits of a modern gas code.

Venting of water heating, space heating and central heating equipment will be an important factor regardless of the type of gas, and an excellent way to improve the venting situation is to make use of our industry's new standard. This is known as ASA Z21.30, American Standard Installation of Gas Piping and Gas Appliances in Buildings. It is identical, word for word, with Pamphlet 54 issued by the National Fire Protection Association and separately by the National Board of Fire Underwriters. These new standards differ from others which have been proposed in the past by being informative and specific. These standards show what performance must be obtained from an appliance, and how this can be accomplished in a practical manner.

Customer is protected

The standards answer the questions of the inspecting and enforcing agency. Piping and appliances which are installed as recommended give the customer assurance that he will be safe from the risks of fire and asphyxiation. Furthermore, the recommendations regarding the use of approved appliances and listed accessories provide the additional assurance

that the appliances themselves will be safe, free from leaks, durable, efficient and easy to maintain.

These standards might be useful for a building code or for a special gas ordinance, but all of us know that that is only part of the job. There must be an understanding of these standards and a desire to use them on the part of builders, installers, plumbers, and the enforcing agencies. Because of that, some companies have very effectively started on the road toward eventual legal adoption by securing substantial numbers of copies of these standards to give to builders, building inspectors, fire chiefs, health commissioners, plumbing contractors and appliance dealers. To a large extent these agencies desire this kind of information and are looking for assistance which will help them guide their people in putting in a good gas installation. This isn't just a matter of mailing standards to the respective recipients. It requires working with them to explain what the standards mean in a practical way.

Even if they are not yet adopted in the legal sense, full understanding of what is in them on the part of appropriate authorities can be very effective. Recent experience in Westchester County, N. Y., has provided a practical demonstration of the value of distributing and explaining the meaning of Z21.30 rules although nothing had been done about their actual adoption. During conversion to natural gas, conversion crews found numerous safety violations. The utility company was in a dilemma as to what to do. Here is where prior distribution of the standard did its work. Health and fire departments took advantage of general policing powers granted them in the interest of public safety, to declare these faulty gas jobs violations. Building owners were forced to take the necessary corrective steps.

The reason for tailoring the standard to fit local conditions always seems valid, desirable, and necessary to local lawmakers. There seem to be some obvious advantages. Unfortunately, the obvious disadvantages are not always scrutinized quite as carefully. They are an ultimate increase in the cost to the builder and to the home buyer. The reason that local ordinance variations make for higher costs scarcely needs to be explored. The more local variations are adopted, the more local codes differ from one another, causing this problem to become worse with time. It has been discussed at length

in the public press under the general heading "Chaos in Building Codes." Several national agencies are at work in an effort to unify building codes and to substitute a performance type of code for a construction type. The advantage in leaving the code alone lies in uniformity, making it possible for everyone to gain the basic benefits, and making it possible for the manufacturers to produce equipment which will meet the requirements in all parts of the country to the ultimate gain of home owners.

Sometimes local modifications are found necessary, but the step should be taken with the greatest reluctance. An illustration of this point is the case of a prefabricated house with considerable steel construction. Because of this, conventional flexibility in the location of gas and electric meters and services was not practical. You just can't cut holes anywhere in steel. Therefore, the fabricator wanted to standardize on meter locations. Was this possible? Indeed not. Some utilities wanted the meters outside the house, some inside, some required them to be 5 feet, others 4 feet off the ground. Required separation between electric and gas meters varied from a few inches to several feet. Some wanted the meters in boxes, some not. Some boxes had to be ventilated, others closed. We scarcely need to argue that somewhere in this welter of requirements there is a reasonable concept of how meters should be set.

A check on quality

The second local variation is much more complicated. This is the question of whether or not merchandisers of gas appliances should or should not be licensed before they may sell them. In some cases, official sentiment is that installers rather than merchandisers be licensed, and then only after tests of competency. In other communities licensing is likely to lead to unnecessary delay in the availability of efficient gas service. Without taking any side as to which is best, we can perhaps agree that any gas utility should certainly pay particular attention to the matter of competency of service and installation men and should endeavor to formulate effective, equitable and practical means of controlling the quality of workmanship and service within its jurisdiction.

At first glance the adoption of a nationally recognized uniform code seems quite simple—just have the local law-making body adopt it. That is where the

trouble starts. According to the latest information there are only 16 states which permit local communities to take such a simple and obvious step. In these states a gas-using community needs only to vote that it wishes to adopt the American Standard Z21.30 (and its subsidiary Z21.8) giving the identification and the date of adoption of this standard. This is an inexpensive matter for the community and since the standards themselves are available at nominal cost from A. G. A. or the National Fire Protection Association, and are even distributed free of charge by the National Board of Fire Underwriters, no one would have any trouble in getting himself a copy and knowing exactly what to do about gas. The one fly in the ointment is: what happens if these agencies revise the standard and wish a new one? If that does happen and you can surely anticipate it, then someone must be alert in the locality to ask the town council to pass an amendment adopting the new standard. This entire procedure is known as the "adoption by reference" method.

This question of date is a real problem in many cases, and there are some startling examples of out-dated ordinances using adoption by reference. The most famous case is a city which adopted the National Electric Code in 1897 and has made no change since. Sometimes another pitfall traps the unwary, and an example is a current Arizona State Senate bill. I refer to the improper type of wording which adopts a specific standard by reference and then adds the words "or latest revision thereof." When we look at this idea it seems good, but it is, in effect, handing over the right to make a local law to some outside agency, in this case let us say the American Gas Association. The community knows exactly what it adopted when a specified standard was enacted into the ordinance. The community must not give away its law-making rights to someone else by adding the words "or latest revision thereof."

In the other states, communities desiring to use Z21.30 would have to spell out exactly what is wanted. Instead of adoption by reference, all the desired clauses from various sources are assembled under one cover and are then printed in full as the local code or ordinance. There is no objection to this, particularly in a large city which can well afford to print such books. For the smaller places there is great temptation to drop items from the national standard and to make such local

modifications as occur to the happy legislators at the time. This is perhaps why any effort to compare and correlate the codes is so hard.

Connecticut wrestled with this problem a bit and did pass a special act to adopt by reference a gas venting standard proposed by the state. This is, however, very limited in scope and might eventually complicate the adoption of a nationally recognized standard.

Another argument for adopting a nationally recognized standard is that federal agencies in many situations already require builders to meet A. G. A. standards. This is an indirect way in which standards come into use in a community. For example, the Minimum Property Requirements of the Federal Housing Administration and the Veterans Administration require use of A. G. A. approved appliances. This is something that city ordinances have so far required only in a handful of communities, although gas companies have subscribed to the idea for so many years. Indirect controls stem from activities of insurance rating bureaus, engineering laboratories like Underwriters' Laboratories, or in the case of industrial plants from the Factory Mutuals or the Factory Insurance Association.

The provisions of a satisfactory ordinance should outline the installation of gas appliances so as to permit their safe and efficient use. They should limit the selection of appliances to those which meet the American Standard Approval Requirements as evidenced by the Seal of Approval of the A. G. A. The ordinance should prohibit the sale, installation and use of gas appliances which cannot meet such minimum standards and the ordinance should be so devised that it can be brought up-to-date from time to time. These are the four basic points which a gas installation ordinance should cover.

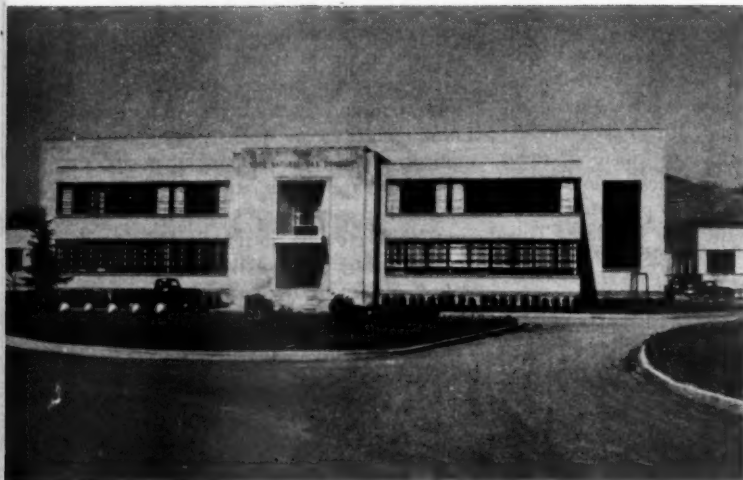
Adoptions pushed

Efforts are underway to facilitate the adoption of such measures. The American Gas Association is taking active part in a project of the American Standards Association known as Z56—Model laws and Ordinances. Out of that program comes a suggestion which has already been widely and effectively utilized in securing the adoption of modern gas codes. It is intended to overcome two problems. First, what to do in states where adop-

(Continued on page 46)

Open model warehouse

*In a warehouse that is
Hope Natural Gas Co
maintenance, repair and*



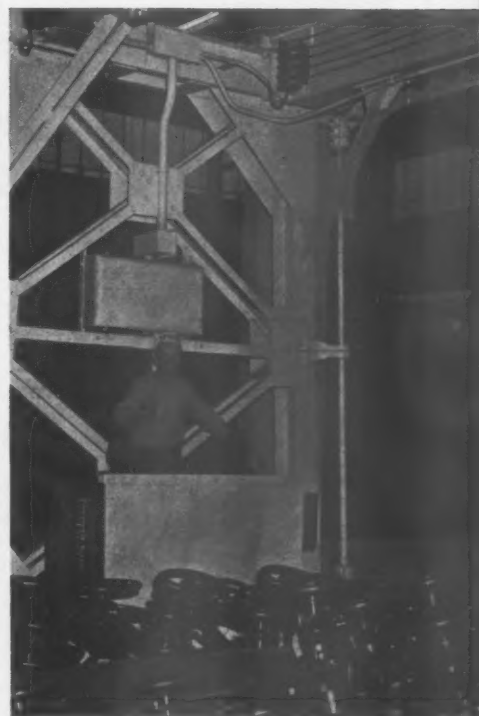
The Hope Natural Gas Company's new warehouse, one mile west of Clarksburg, W. Va., presents an eyecatching view. The two buildings, with their clean-appearing buff brick walls, and the neatly arranged pipe yard are on a 27-acre tract of land



A crane is used to unload cars on the pipe yard's four rail sidings, which total 3,500 ft. in length, to the hundred-odd concrete skids. A pipe cleaning machine and a plant to steam tanks and vessels of all sizes are in the yard. An estimated 20 miles of pipe and casing is salvaged annually

Four railroad cars can be spotted on the siding in the building and three trucks can be loaded at its two docks. Large storage area is 170 by 380 ft. while two 60 by 180 ft. wings house the machine, electrical and welding shops. Meter and carpenter shops are in two 50 by 100 ft. wings

standing both for its efficiency and attractiveness,
 any stores its equipment, parts, supplies and records, as well as carrying on
 Co salvage work. Latest methods and machinery are used
 ad



Two Gantry traveling cranes, as the one above, and two overhead travelers extending into shop sections, facilitate material handling. A 10-ton overhead traveling crane runs the length of the machine shop and into the general warehouse, while a similar one goes through welding shop

A variety of operations are carried on in the warehouse and maintenance building. The meter shop, top left, is set up to repair about twelve thousand domestic meters a year, as well as all types of gas measurement and pressure regulation instruments. Welding shop equipment includes nine stationary welding machines, a gas-fired furnace for cast-iron welding, punch and shears and pipe beveling machine, upper right. A large Monarch lathe, lower left, one of the pieces of equipment in the complete machine shop finishes metalized rods and pistons. Lower right, modern shelving and handling equipment facilitate the work

By making facilities and supplies readily accessible, savings are effected in man hours on each job

Study raises job efficiency

By J. C. MURTHA

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Consolidated Edison Co. of N. Y., Inc.
New York, N. Y.

● The following article is one of a scheduled series of feature presentations on employee relations topics which are currently being studied by the A. G. A. Personnel Committee.

Work Simplification has been defined as "The organized use of common sense for finding easier and better ways for doing work." It operates on the premise that productivity depends upon method. Work, as it is usually performed, is accomplished with tremendous waste. A workman finds that he needs bolts for a job. The storeroom is one-quarter mile away. To get the bolts he must find the foreman, have a requisition signed and walk a total of one-half mile to and from the storeroom. An operator on the fourth floor of a building needs a brush, which is kept in the storeroom on the second floor of the same building, but the requisition for the brush must go through a clearing office three miles away, through a clerical procedure there and back to the storeroom in the original building before the brush can be sent up two floors where it is needed. All of this takes so long that brushes are usually bought on petty cash from a store across the street. These are not extraordinary cases. Similar cases can be found in almost every type of industry. They contribute nothing productive to the job in hand. In fact they interfere

with production and increase costs unnecessarily. They are in short, Waste. They continue to exist because neither the operator nor his supervisor recognizes them as such.

Productivity can be increased in one of two ways. The job can be "speeded up." Very little that is good can be said for this device. It operates only so long as the incentive is present, whether that incentive be based on fear or on the hope of gain. But basically the "speed up" is defective because it speeds up all parts of the job *including the parts that are not necessary*. Work simplification, on the other hand, achieves increased productivity by removing from the job those elements which do not contribute usefully to the result desired. In other words, it attempts to eliminate waste—the waste of time, material and manpower. To cite an example, it was found in a study of stores procedures in our company that 90 percent of the paper work was caused by 10 percent of the stored items. This led to the establishment of self-service storerooms with considerable savings in clerical work and forms and considerable simplification in bookkeeping.

New approach promoted

Work simplification attempts to develop in supervisors a new approach to work. The program now in use in our company is based on material presented by Allen H. Mogensen at his Work Simplification Conferences at Lake Placid. We have selected those parts which seem most widely and immediately applicable to our organization. These are princi-

pally the flow process chart and the principles of motion economy.

A flow process chart is a detailed record of the sequence of events in any process or procedure. It may be used to study an entire operation or any part of it. It may be used, for example, to study the entire procedure necessary to the installation of a gas service into a customer's premises or only that part of the procedure covering the collection and delivery of parts to the job. Obviously such a detailed record can be made only by actually following the job step by step. It cannot be made from a desk. Its chief advantage is that it furnishes a complete and dependable record of every element entering into the process and thus permits thorough and critical analysis. It would include, where the information is useful to the analysis, a layout plan showing the flow of work. It is also useful to designate each of the elements of the process as one of the four fundamental elements of work. These are:

Operation—An operation is performed when something is being changed, created or added to. Typing a letter, filling out a form, driving a nail, drilling a hole are operations.

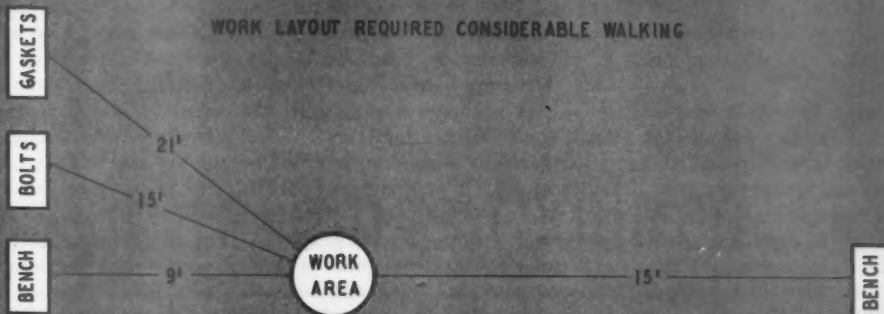
Transportation—A transportation occurs when something is moved from one place to another. A letter is carried to a desk, an object is moved by a truck, a man walks from one place to another.

Inspection—An inspection is an examination to determine quality or condition. Proofreading a letter, checking a requisition, checking the diameter of a shaft are examples of inspection.

RE-ASSEMBLY OF A STEAM METER

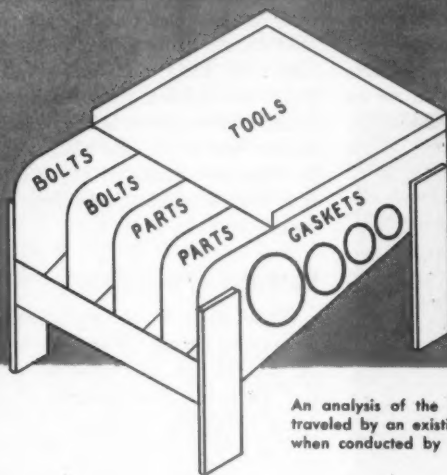
OLD METHOD

WORK LAYOUT REQUIRED CONSIDERABLE WALKING



NEW METHOD

PORTABLE WORK BENCH ELIMINATES WALKING



FLOW PROCESS CHART

SUMMARY

	OLD METHOD	NEW METHOD	SAVINGS %
NO. OPERATIONS	108	90	17
NO. TRANSPORTATION	37	4	89
NO. STORAGES	0	0	0
NO. INSPECTIONS	4	4	0
DISTANCE TRAVELLED	474'	12'	97
MAN HOURS PER ASSEMBLY	.594	.380	36

An analysis of the operations, the transportations, storages, and inspections, and the distance traveled by an existing method of re-assembling a steam meter, and comparison of the same job when conducted by a new method, showed that required man hours had been reduced a third

Storage—Storage occurs when an object is kept or held pending further work. Materials in a storeroom, a letter in a mail box, a man waiting for a bus are examples of storage.

These elements are usually represented on a flow process chart by symbols:

- operation; ◦ transportation;
- inspection; ▽ storage.

When a flow process chart is completed a process track is constructed by connecting from element to element the symbol representing the respective parts of the process thus giving an over-all picture of the process and making the essential parts of the process stand out vividly against the non-essential.

Opposite each transportation the dis-

tance involved is entered. The measurement is made by simply pacing and allowing 3 feet per pace.

Time is inserted opposite the operations and, if it appears to be valuable for subsequent analysis, opposite storages or inspections. The total number of transportations, operations, inspections and storages, the total distance traveled, the total time involved, are then entered as a summary and the record is thus completed as to the present method of operation.

The job can now be analyzed at leisure. This analysis consists basically of applying against the job as a whole and each element thereafter, the following question pattern:

What—What is being done? What is the purpose of doing it? Why should it

be done at all? These questions determine the value, the useful purpose, if any, of the work.

Where—Where is the work being done? Why should it be done at that place? Where else could it be done?

When—When is the element performed? Why should it be done then? Is this the best time for it?

Who—Who is the right person performing the operation? Who else could do it?

How—How is the work being performed? Why is it done that way? Is there an easier way? Is there a better way?

These questions are asked in a definite order because they lead to definite results. "What?" for example, leads to elimination. Asking it first guards against

the possibility that a job will be simplified which should not be performed at all. "Where," "when" and "who" lead to combination of elements or to change in sequence or place or person. "How?" since it is really an investigation of method, leads to simplification of method.

This questioning attitude develops a point of view that considers the value of the whole operation. Its purpose is to eliminate useless and unnecessary work; to bring out the best type of operator and equipment needed; to determine where the work can be most economically performed. By challenging each step, it often leads to the conclusion that a particular part of a job and sometimes the whole job is unnecessary.

Frequently, a great deal of walking can be eliminated by the proper application of these questions. For example, in the reassembly of a certain type of meter in our company, it was developed that the total amount of walking in the old method was 474 feet. Analysis showed that the walking could be reduced to 12 feet by a simple rearrangement of work. Since a large number of these meters go through the process annually, it was possible to show that the total saving in walking amounted to about 80 miles a year.

Simplification aided

The analysis of a flow process chart leads inevitably to simplification and to the development of an improved method. The improved method can be tentatively laid out on another flow process chart and comparison of the summary of the proposed operation and the present operation will often indicate the startling improvements that can be made with the expenditure of little or no money.

We have found that a proper presentation of these simple principles and the principles of motion economy leads to enthusiastic understanding and acceptance by supervisors. But enthusiasm must be tempered with an understanding that there is a right way and a wrong way to introduce simplification in practice. There is a human problem involved and it is at least as important as the mechanical problem of changing work methods.

And so we devote most of one session to a discussion of some of these human problems, what they are, why they exist and how they may be handled. We develop the point that it is normal and natural for people to resist change. They

always have and probably always will. We dramatize this by referring to the traffic signal with its red and green lights and ask "Which light controls your mind?" The red light is the stop signal—"It won't work; it can't be done; we tried it." It indicates no admission to new ideas. The green light indicates the open mind—the willingness to get all the facts, to give the new idea a try.

Resistance to change can probably be better handled if we understand that its sources are complacency, habit, insecurity, and resistance to criticism.

Webster defines complacency as "Self-approval, serenity." It is the serene, self-satisfied attitude which says: "It is all right for the other fellow's department, but there is nothing around here that needs improvement."

Said Dr. Albert Walton, consulting psychologist, "Complacency, the feeling that all's right with the world, especially with us, is a comfortable feeling. . . . It is when we fear that this comfortable state of affairs may be upset that we go into action. Or, when it has been upset, we act to restore it. It is doubtful if we ever do anything at any time except to prevent our complacency from being disturbed, or to recover it when disrupted."

Habit is at once a blessing and a curse. It enables us to go through a multitude of daily actions with a minimum of effort, but stands flatly in the road of progress. People do not like interference with established habit. What is your attitude when you find someone else in your favorite chair just when you want to settle down with the evening paper?

Everytime a new method is introduced the operator is required to change established habits to which he has become adjusted and with which he is comfortable. It is reasonable to expect that the discomfort involved in learning new habits will engender resistance.

People quickly become suspicious of change. They look first at the possible effect on themselves. Even the most innocent of changes can generate fear. A person is moved from one desk to another because the light at the new location is better, but the move is made without explanation to the occupant of the desk. Immediately he is upset. Is there something wrong with his work? Has someone complained? Is this a move toward getting him out of the job?

The reaction is emotional and you may say it is silly. But it is certainly normal and human.

Do you believe that people like to be told when they are wrong? The late Dr. Harry Myers, when personnel director of Frigidaire Corp., said, "The people who help me most are those who tell me where I am wrong." I think we will all admit if we look back on our tasks that those who have helped us most are those who have been able to show us where we were wrong. But how many of us are ever willing to take advice? I am not referring to destructive criticism, but only to criticism that is intended to help us to do better jobs. If criticism is so good for us, why do we constantly resent it? I believe that the answer is that we would much rather be told when we are right and most of us, when we ask for advice, merely want to have our own ideas verified. If we do not get this, we are likely to dismiss the advice.

Said Thomas A. Edison, "There is no truer test of a man's qualities for permanent success than the way he takes criticism. The little man can't stand it. It pricks his egotism. He 'craw-fishes.' He makes excuses. Then, when he finds that excuses won't take the place of results, he sulks and pouts. It never occurs to him that he might profit from experience."

Receptivity boosters

These, then, are the ingredients of resistance to change. What can we do to prevent the red light from being turned on? There are four methods of encouraging receptivity to change:

The first is recognition. We all want to be recognized personally and to have our efforts acknowledged. We want to be on the team. All of us want to take part in what looks like an important enterprise.

We want to be respected. We want to feel that our ideas deserve consideration and are welcomed. We want to belong. We want to belong in the sense that our importance is recognized, that we have the approval and acceptance of our fellow workers. Asking for the assistance and advice of an operator in improving his job compliments him. It is evidence that you consider his opinion important and consulting him helps sustain his high opinion of himself.

We all want to know why changes that affect us are being made and a proper explanation is usually effective in eliminating the fear that is insecurity. The clerk,

(Continued on page 48)

*Changes in consumer living habits have placed
on meter readers a greater burden of completing scheduled calls*

More skip readings required

By WILLIAM M. PENFIELD

*Public Service Electric and Gas Co.
Newark, N. J.*

● Presented at the National Conference of Electric and Gas Utility Accountants, April 7-9, 1952, as a contribution by the Committee for Improving Meter Reading Efficiency, of which Mr. Penfield is chairman. The committee is composed of: G. F. Higgins, co-chairman, W. F. Amann, S. A. Cole, P. J. Franz, J. R. Heery, M. M. Ilch, J. G. Reynolds, E. F. Schlender, W. R. Seidel and M. F. Young.

Recent socio-economic changes have materially increased the number of meters that are not read during regularly scheduled calls. This is making "skip" reading a problem of rising importance to more and more utilities, with a considerable variance between company policies for handling it.

Among the basic changes in consumer living and earning practices which have magnified this problem are:

Present economic conditions make additional income necessary and result in all members of the family working. If there are children, they are in school or being cared for outside of the home. No one is at home to admit the meter reader.

The conversion of basements in many three- and four-family houses into living quarters which are rented to business couples results in locked meter rooms with no key in the hands of anyone on the premises.

There are an increasing number of "floating" janitors who do not reside on the premises and cannot be readily located when the meter reader calls. The

meter room is usually locked and keys are frequently not available.

Changing living conditions have resulted in one- or two-family houses now being occupied by five or six families, resulting in the door to the cellar or meter room being kept locked.



William M. Penfield gives his committee's and his company's solutions to a problem that is steadily growing more important

No time allowance is made in the work assignment of the meter reader to provide for call backs.

The problem is further magnified by the tremendous increase in costs of obtaining skip readings. Prior to 1937, when most employment was based on a 44- or a 48-hour week, it was common practice to use meter readers on Saturday mornings to make skip readings; they would be requested to visit consumer premises before 8 a.m. on their way to the office, or after 5 p.m. on their way home.

Now overtime pay is required for such

work and it is costly to use men on Saturday, or before or after regular working hours. This may be conservatively estimated as costing more than one dollar per reading, when consideration is given the wages and travel expenses of the meter reader, the time of the bookkeeper in entering the reading, the special billing procedure, the special handling of the "scrap" sales in the bookkeeping department and the mailing of the bill.

One utility in an industrial area, with bi-monthly billing procedures for residential accounts, and about seventy percent of its meters outside the houses, bills approximately two hundred and eighty thousand residential and sixty-six thousand commercial accounts each month. Its program for handling skip readings emphasizes the work and expenses involved.

This utility's records show that after the first regular reading call, an average of 6.3 percent (21,797) meters have not been read. It is the practice to leave a meter reading dial card at those premises to be marked by the customer and placed in the window. The following day skip men return to obtain the meter readings. Approximately seventy percent of the meters skipped on the first call are read on the skip call, of which 40 percent of the readings are taken from the dial cards marked by the customers. If the men are unable to remove the dial card after taking the reading, a courtesy card is left on the premises informing the customer that the reading has been obtained.

After the regular and first skip calls 1.8 percent of the meters remain unread. Meter readings are estimated for about one-half of these unread meters, leaving 0.9 percent (3,114) accounts not ready for billing. These unread accounts are re-

ferred back to the meter reading group for another attempt to read the meters. An average of fifty percent of the meters for these accounts are read, resulting in approximately .4 percent of the total accounts remaining unprepared for billing at the regularly scheduled time. If meter readings are not obtained on the second skip call, dial postal cards are left on the premises for the customers to mark and mail.

When residence and commercial accounts have not been billed two consecutive billing periods, they are referred to the meter reading group for further attempts to read the meters by the automobile men who travel in all sections of the city daily. If one or two calls prove unsuccessful, an effort is made to contact the customer by telephone to make an appointment for reading the meter.

If this fails and the meter is not read at the time of the next billing, a registered letter is mailed to the customer asking him to contact us and make an appointment for reading his meter. If no reply is received after 10 days, an order is issued to the sales department to investigate for disconnection of service.

It is difficult to estimate the costs of this procedure. While the meter reading group consists of 55 men, there are 15 additional men in the investigating group. These men investigate usage variations as well as follow-up skip work and read regular books in the sparsely settled sections.

Skip reading can be divided into two classes:

Accounts billed on rates which require monthly readings due to demand features. These accounts require relatively few skip readings because there is usually someone on the premises to admit the meter reader;

Accounts, primarily residential or small commercial, where the decision to obtain skip readings is a matter of company policy.

When skips occur, it is usually due to one of the following reasons:

1. Business establishments opening late in the day. Owner is out and he is the only one with the key to the meter room;

2. Commercial buildings. Janitor has key and cannot be located;

3. Owner-operated establishment where premises is often closed during absence of the owner;

4. Mid-week afternoon closings.

There are two reasons not necessarily

applicable to other types of accounts why readings on demand reading accounts should be obtained:

1. The demand reading must be obtained to give the customer a correct bill. A failure to obtain a reading would not result in a lower bill, but might cause a higher bill should the demand vary to any extent from month to month. Therefore, it is distinctly an advantage to the customer to have regular readings;

2. The credit and collection control which regular billings make possible may be essential. This is of particular importance in large commercial or industrial accounts. The accounts in this group—small commercial or residential—make up the great bulk of missed readings.

Each company management must determine at what point it is desirable to obtain missed readings. Probably this decision will be based almost entirely on the cost of obtaining these readings, weighed against the estimated losses which might result if readings are not obtained. Beyond a certain point it will be found unprofitable further to intensify the efforts to obtain skip readings.

Steps toward solution

A questionnaire was prepared by the Committee for Improving Meter Reading Efficiency to determine the present practices in the industry. This was sent to 54 companies and 46 replies were received which indicates a substantial amount of interest in this project. A summary of the replies follows:

1. Approximately how many meters are read?

	Monthly	Bi-monthly
Commercial	2,593,557	489,342
Residential	12,642,908	6,966,950

2. If readings are not obtained on the first call, do you average readings?

Yes, 33; No, 11.

2-A. If readings are not obtained on the first call, do you average the amount?

Yes, 9; No, 19.

This question was difficult to answer because some companies may average or estimate residential and small commercial accounts but do not average on larger accounts. The purpose was to determine whether estimating or averaging was in general practice when readings were not obtained, and the answers indicate that it is.

3. If you average or estimate, how many months will you do so without an actual reading?

1 mo.— 4	4 mo.— 1
2 " —12	6 " — 2
3 " —17	Indefinite— 1

4. How many attempts are made to read meters that cannot be billed without actual readings?

1 call — 5	4 calls— 1
2 " —10	5 " — 2
3 " — 2	No limit— 8

5. What is the percentage of skipped readings per month to total meters scheduled to be read?

If estimated	Not estimated
From less than one percent to 18 percent.	From 1.5 percent to 10 percent.

Average 5 percent. Average 7 percent.

This question was apparently misunderstood by officials of many companies, who apparently considered a missed reading as a missed reading even though the account was estimated and billed. In one company with approximately 205,000 accounts, about 10,000 are estimated each month and there are approximately 1,200 accounts which cannot be billed and must be followed as missed readings. Thus the figure would be about five percent without estimated readings and less than one percent with estimated readings.

6. Has this percentage increased or decreased in the past ten years? While the answers to this question were mixed, it is evident that there has been an increase which would have been much greater had not action been taken as follows:

Average or estimated readings;
Meters set on the exterior of buildings;

Various other means of obtaining readings such as customers' readings and keys.

7. Are dial reading cards used when readings are not obtained?

7-A. Are cards left with the customer by the meter reader?

Yes, 33; No, 7.

7-B. Are cards mailed to customers in advance?

Yes, 9; No, 28.

(Continued on page 44)

Training in technical aspects of commercial gas cooking will enable salesmen to meet competitive claims

School to improve salesmanship

The just-announced program of the A. G. A. Commercial Gas School, scheduled for the Edgewater Beach Hotel, Chicago, May 5 to 9, includes leading specialists as instructors and lecturers. Shaped to the boosting of commercial gas sales through improved salesmanship, the school's enrollment is limited to employees of gas companies, gas equipment manufacturers, gas equipment dealers and present or prospective commercial gas consumers.

The curriculum has been selected to give students a thorough familiarity with the technical aspects of commercial gas cooking equipment, in order that they may meet competitive claims. It is recognized that salesmen of commercial equipment should be conversant with the requirements of the variety of cooking demands of establishments carrying on large volume cooking, water heating and other commercial operations.

The course will provide the basic training which new men obviously need, and give experienced men the benefit of a refresher course combined with advanced training.

Among the subjects to be included are: the importance of commercial gas and the commercial gas man; functions of individual pieces of cooking equipment; kitchen planning and ventilation; and gas competition. A discussion on sales techniques will conclude these lectures.

The opening hours of the first day, May 5, 8:30 a.m. to 10:30 a.m. will be devoted to registration. Chairman for the day is R. A. Malony, executive vice-president, Bridgeport (Conn.) Gas Light Co. and chairman, A.G.A. Industrial & Commercial Gas Section.

The morning session of that day will be opened with welcoming remarks by

F. X. Mettenet, vice-president, The Peoples Gas Light & Coke Co., Chicago. There will follow an introduction to the school by Lawrence E. Biemiller, chairman, Sales Training Committee, Industrial & Commercial Gas Section, and assistant manager, industrial fuel department, Consolidated Gas Electric Light & Power Co. of Baltimore.

Speaking on "The Importance of the Commercial Gas Load," Mr. Mettenet will tell students why it is the most profitable one for gas companies and give the reasons it should be aggressively promoted.

"The Importance of the Commercial Gas Man" will be detailed by Mr. Malony during the latter portion of this opening day morning session. He will explain the important role which company representatives play in maintaining good customer relations in the volume cooking field.

Teach deep fat frying

The Monday afternoon session will be devoted to a lecture and a demonstration. The first, "Factors Governing the Stability of Frying Fat in Frying Kettles," will be delivered by George T. Carlin, assistant director of research, Swift & Company. The deep fat fryer is an increasingly important specialty appliance in the commercial kitchen. Mr. Carlin's lecture will include directions on the use of a deep fat fryer and the selection of the proper types of fat.

A demonstration of the use of the deep fat fryer in the proper preparation of fried chicken will be conducted by Robert Grusendorf, also of Swift & Company.

Mr. Biemiller will be chairman for the second day of the school, Tuesday,

May 6. The day will be devoted to a series of lectures on gas cooking equipment, its functions, types, capacities and controls, and how to sell it effectively against competition.

"Heavy Duty Fryers" will be the subject of a lecture by Richard L. Stone, senior research engineer, A. G. A. Laboratories, Cleveland. He will speak from the background of extensive facts gathered during recent research on this subject. (An article in this issue of the MONTHLY describes a gas fired deep fat fryer built in accordance with the findings of this research.)

Hayes S. Walter, A. G. A. commercial cooking representative, will discuss "Warming Tables." There will follow a full color sound film on steam cooking, presented by Kurt L. Seelbach, treasurer, Cleveland Range Company.

"Stock Kettles" is the subject on which Fred H. Groen, Jr., vice-president, Groen Manufacturing Co., will address the student body. "Counter Appliances" will be the subject of the lecture by A. M. Bornhofen, vice-president, Anetsberger Bros., Inc. Mr. Bornhofen's talk will be devoted to fryers, griddles and toasters. He will be followed by Edgar A. Jahn, assistant utilization engineer, A. G. A., who will discuss coffee urns.

The Tuesday afternoon session will open with a lecture, "Ranges," by Merrill H. Douglas, general sales manager, Vulcan-Hart Mfg. Company. Paul Inskip, central division sales manager, Detroit-Michigan Stove Co., will follow with a talk, "Broilers."

"Roasting Ovens" will be the title of the lecture by Tracy B. Madole, manager, commercial sales department, Magic Chef, Inc. The presentation, by

Paul C. Grimes, sales manager, The G. S. Blodgett Co., of a film entitled "Baking Ovens," will complete the day's classroom activities.

The faculty and student dinner is scheduled for Tuesday evening, in the Marine Dining Room of the Edgewater Beach Hotel.

Chairman for Wednesday, May 7, is L. J. Fretwell, chairman of the A. G. A. Equipment Improvement Committee, and chief commercial engineer, Oklahoma Natural Gas Company.

The morning session will open with a lecture on "Competition," delivered by W. D. Relyea, assistant to the sales manager, Public Service Electric & Gas Co., Newark, N. J. With competition for the commercial cooking load on the increase all over the country, Mr. Relyea will point out ways to meet it by more intense selling efforts.

The second lecture of the morning will be "Comparative Tests and How to Figure Costs," by C. George Segeler, utilization engineer, A. G. A. He will describe methods of meeting competitive

claims by knowing both the gas story and the opposition's story, and then by presenting the basic facts which affect the customer's pocketbook.

The morning session will conclude with a demonstration, "Mr. Flameless and Mrs. Flame," staged by F. A. Kaiser, assistant to the president, Detroit-Michigan Stove Company.

L. H. Hoelter, sales manager, The A. O. Smith Corp., will open the afternoon session with a lecture on "Water Heater Requirements." He will emphasize the importance of a plentiful supply of hot water in volume cooking establishments.

"Kitchen Planning for Efficiency and Ventilation" will be treated by I. S. Anoff, president, and L. J. Reutlinger, engineer, Albert Pick Co., in the latter portion of the Wednesday afternoon session.

W. D. Relyea will be chairman for Thursday, the fourth day of the school.

The morning session will open with a lecture, "Water Heating," by L. J. Fretwell, who will describe the applicability of this load to the operation of the com-

mercial representative.

"Baking" will be the subject of J. Edward Coan of Middleby-Marshall Company. He will describe the advantages of gas and modern ovens in the small bakery.

Small boilers have many applications. The choice of the proper type and size for greater customer service, based on a thorough study of the particular needs of the process involved, will be described by E. E. Magnuson, Eclipse Fuel Engineering Co., in his lecture on "Steam Generation."

James J. Condon, manager, commercial sales department, The Peoples Gas Light & Coke Co., will explain "What to Look for at a Restaurant Show," in the concluding lecture of the morning session.

Thursday afternoon will be devoted to an inspection trip to the National Restaurant Exposition, Navy Pier, Chicago. Buses will leave the Edgewater Beach Hotel at 1:00 p.m. to take the student body and faculty to the exposition.

(Continued on page 46)

Combined Exhibit sure to impress show visitors

The Combined Commercial Cooking Exhibit will occupy a dominant position, extending from side to side of the Navy Pier, Chicago, May 5 to 9, during the 33rd Annual National Restaurant Convention and Exposition. The same nineteen manufacturers of heavy-duty commercial cooking equipment who cooperated with A. G. A. to make last year's exhibit the largest ever, will again be there to tell restaurateurs the gas cooking story, and to exhibit the latest developments in gas cookery.

Last year's exposition drew 18,209 restaurant, cafeteria and fountain managers and dietitians from every section of the United States and from Canada and Mexico. Indications are that this year's show will draw an even greater attendance.

The 1952 show will again feature a special preview day for equipment dealers and wholesalers.

Cooperating in the A. G. A. Combined Commercial Cooking Exhibit will be: Anetsberger Bros., Inc., Northbrook, Ill.; The G. S. Blodgett Co., Inc., Burlington, Vt.; The Cleveland Range Co., Cleveland, Ohio; Detroit-Michigan Stove Co., Detroit; Duke Mfg. Co., St. Louis; Gas Consumers Service, Chicago; Groen Mfg. Co., Chicago; B. H. Hub-



The A. G. A. Committee on Displays at National Expositions met to arrange the Combined Commercial Cooking Exhibit. Seen, sitting, clockwise from left, are: Lewis Barry, display builder; J. T. Heilig, Savory Equipment Inc.; Chester A. Shear, Vulcan-Hart Mfg. Co.; J. L. Gabris, Robertshaw-Fulton Controls Co.; Chairman J. C. Dorsey, East Ohio Gas Co.; Secretary M. A. Combs, A. G. A.; R. L. McVicar, Groen Mfg. Co.; E. J. Horton, Robertshaw-Fulton Controls Co. and Richard Mantz, Magic Chef Inc. Standing: A. S. Hess, Detroit-Michigan Stove Co.; T. M. Offutt, Washington Gas Light Co.; Hayes S. Walter, A. G. A.; P. C. Grimes, G. S. Blodgett Co. and F. J. Drohan, Cleveland Range Co. and Anetsberger Bros. Inc.

bert & Son, Inc., Baltimore; Kewanee Industrial Washer Corp., Kewanee, Ill.; Lyons-Alpha Products Co., Inc., New York; Magic Chef, Inc., St. Louis; The Malleable Steel Range Mfg. Co., South Bend; Market Forge Co., Everett, Mass.;

J. C. Pitman & Sons, Inc., Lynn, Mass.; Robertshaw-Fulton Controls Co., Youngwood, Pa.; Ruud Mfg. Co., Pittsburgh; Savory Equipment, Inc., Newark, N. J.; Sellers Engineering Co., Chicago; and Vulcan-Hart Mfg. Co., New York.

*Production and Chemical Conference papers
will describe various facets of distributing natural gas*

Emphasis on natural gas

The various aspects of providing natural gas for our industry's customers will occupy an important portion of the A. G. A. Production and Chemical Conference, Hotel New Yorker, New York, May 26-28, 1952. General sessions, luncheon conferences and meetings conducted by various committees of the A. G. A. Operating Section, will include authoritative papers on various timely aspects of the broad nationwide shift to natural gas.

Running through all of these programs will be a strong thread of emphasis on safety. Each of the luncheon conferences, especially, will promote safety in the gas industry.

The Monday morning, May 26, session of the conference will be opened by E. G. Hammerschmidt, chairman, A. G. A. Chemical Committee, who will preside. Mr. Hammerschmidt is also a member of the Managing Committee of the Operating Section and chief chemist, Natural Gas Pipeline Co. of America, Fritch, Texas.

After making opening remarks, he will introduce H. Carl Wolf, A. G. A. managing director, who will analyze "The Shifting Production Scene."

"Economics of Peak Shaving" will be explored jointly by Hall M. Henry and J. W. Carroll. Mr. Henry, vice-president, NEGEA Service Corp., Boston, is a member of the Subcommittee on the Manufacture of Higher Btu Gases, of the A. G. A. Gas Production Committee. Mr. Carroll, assistant superintendent of production, Delaware Station, Philadelphia Electric Co., is past chairman and presently a member of the same committee.

A discussion period will follow the



Group leaders for the A. G. A. Production and Chemical Conference will be: E. G. Hammerschmidt, chairman, Chemical Committee, left, and C. L. Hulswit, chairman, Gas Production Committee, right

delivery of these papers.

Continuing the emphasis on safety, a panel discussion by production and chemical men on the promotion of public safety will follow.

The Monday morning session will be concluded with a paper on the "Problems Encountered in Operation of Stand-By High Btu Oil Gas Plants," by Glenn M. Hammond, superintendent of engineering, transportation and stores, Michigan Consolidated Gas Co., Grand Rapids, Michigan. Mr. Hammond is a member of the Subcommittee on the Manufacture of Higher Btu Gases, A. G. A. Gas Production Committee.

F. J. Pfluke, superintendent, gas operations, Rochester (N. Y.) Gas and Electric Corp., will open the Monday afternoon general session with a summation of "Research in Review." Mr. Pfluke is an ex-officio member of the Gas Pro-

duction Research Committee, chairman of the Technical Advisory Committee, a member of the A. G. A. Operating Section Managing Committee and a member of several supervisory committees for research projects.

"Continuous Pressure Gasification of Pulverized Coal in Suspension," will be explained by C. G. Von Fredersdorff and E. J. Pyrcioch of the Institute of Gas Technology. Mr. Von Fredersdorff is a member of the A. G. A. Corrosion Committee and of the Subcommittee on Causes of Corrosion.

"The Production of Oil Gas as Substitute for Natural Gas" will be explored by R. D. Clevenger, C. A. Hall, H. R. Linden and C. H. Riesz of IGT. Mr. Linden is a member of the A. G. A. Subcommittee on Manufacture of Higher Btu Gases and of the Joint Gas Production

and Chemical Subcommittee on Tar Dehydration.

Another presentation by IGT members will be the "Influence of Substitute Gas Compositions on Interchangeability with Natural Gas." Participating in this will be R. A. Brown, D. L. Nicol and Mr. Linden. Mr. Nicol is a member of the A. G. A. Customer Service Subcommittee of the Distribution Committee.

"The Improvement of Catalysts and Catalyst Supports" will be explained by H. A. Dirksen, W. J. Pieticka and C. H. Riesz, also of IGT.

"Preliminary Operating Results on Pressure Gasification Pilot Plant Utilizing Pulverized Coal and Oxygen," will be presented by Supervising Engineer G. R. Strimbeck, J. B. Cordner, Jr., K. D. Plants, L. D. Schmidt and H. G. Taylor, U. S. Bureau of Mines, Morgantown, West Virginia. Mr. Strimbeck is a member of the A. G. A. Gas Production Committee and of the Subcommittee on Water Gas.

Tuesday sessions set

The Tuesday morning chemical session will open with an exposition of "Absolute Water Vapor Determination in Natural Gas by Chemical Methods," presented by W. F. Brickell, research department, United Gas Pipe Line Corp., Shreveport.

"Natural Gas Pipeline Deposits" will be discussed by L. T. Bissey, instructor in petroleum and natural gas engineering, Pennsylvania State College.

The derivation of "Chemicals from Natural Gas" will be reported on by D. T. MacRoberts, director of research, United Gas Pipe Line Corp., Shreveport. Mr. MacRoberts, active in A. G. A., is a member of its Chemical Committee and a member of that unit's subcommittees on: Luncheon Conferences, New Developments, Special Advisory Committee, and chairman, Subcommittee on Natural Gas Problems.

"The Disposal of Oily Wastes" will be detailed by Charles Koons, effluent engineer, Koppers Co., Inc., Kearny, New Jersey. His address will be followed by one on "Air Pollution," by J. F. Barkley, chief of fuels utilization branch, U.S. Bureau of Mines, Washington. Mr. Barkley is a member of the A. G. A. Joint Gas Production and Chemical Subcommittee on Plant Waste Disposal.

The gas production session will be called concurrently Tuesday morning.

Among the timely papers projected for this session, one of the first to be presented will be "Recent Developments in By-Product Recovery Equipment," by E. V. Schulte of Koppers Co., Inc.

"What Makes Coal Coke?" will be explained by Dr. Frank W. Smith, chemical engineer, U.S. Bureau of Mines, Pittsburgh. Mr. Smith is a member of the A. G. A. Subcommittee on Coal Expansion Testing and of the Subcommittee on the Survey of Gas, Coke and By-Product Making Properties of American Coals.

The "Coal Expansion Subcommittee Report" will be presented by that group's chairman, J. G. Sweeney, chief chemist, The Brooklyn (N. Y.) Union Gas Company. Mr. Sweeney is also a member of the Managing Committee of the Operating Section, the Chemical Committee, the Subcommittee on Planning and Programs and the Subcommittee on Gas Production.

Dr. E. H. Smoker, operating manager, The United Gas Improvement Co., Philadelphia, will report on recent developments in that company's "Cyclic Catalytic Reforming Process." The morning session will conclude with an explanation of the "Effects of Scrubbing High Btu Gases," by John Sholar, manager, gas department, South Carolina Electric & Gas Co., Columbia. Mr. Sholar is a member of the Chemical Committee and the representative of Mid-Southeastern Gas Association to the Managing Committee of the A. G. A. Operating Section.

Three luncheon conferences will be held on Tuesday. One on "Oxygen in Gas Manufacture," will be presided over by Irving Roberts, Chemical Engineering Consultant of Jeannette, Pa., and vice-chairman of the Subcommittee on the Use of Oxygen in Gas Manufacture while H. R. Batchelder, U. S. Bureau of Mines, Louisiana, Mo., chairman of the subcommittee will be alternate chairman of the luncheon conference. At the speakers table to lead the discussion of various facets of the subject will be: C. L. Hulswit, president, Rockland Gas Co., Inc., Spring Valley, N. Y. who will state the problem; C. F. DeMey, vice-president, Columbia Engineering Corp., New York, who will explain "Transportation and Distribution Problems of Natural Gas Substitutes"; R. R. White, assistant professor of chemical engineering, University of Michigan, who will discuss "The Nature and Economics of Methane Synthesis"; L. W. Alberts, Blaw-Knox Construction Co., Pittsburgh, who will tell of "The Manufac-

ture of a Pipeline Gas Substitute"; and H. S. Turner, Pittsburgh Consolidation Coal Co., Library, Pa., who will tell of "Pipeline Gas from Bituminous Coal."

The Plant Waste Disposal luncheon conference will have K. E. Baird, chief chemist, Philadelphia Coke Co., and vice-chairman of the Joint Subcommittee on Plant Waste Disposal as its chairman. "Air Pollution from Industrial Waste" will be discussed by J. F. Barkley, U. S. Bureau of Mines, Washington. "Oily Wastes and Dispersions" will be the subject of an address by W. B. Hart, Atlantic Refining Company. Papers on other aspects of plant waste disposal will be presented by Thomas B. Tinney, chief chemist, Philadelphia Gas Works Co. and Charles Koons, Koppers Co., Kearny, New Jersey.

F. X. Asselin, Jr., of Stone & Webster Service Corp., Boston, will be chairman of the luncheon conference on water gas, given by the Gas Production Committee Subcommittee on Water Gas. Alternate chairman will be Vincent Salzone, assistant engineer, Consolidated Edison Co. of N. Y., Inc., New York. Among the discussion topics at this luncheon will be: "Safety in Water Gas Plants"; "Use of 'Physic' Oil in Fuel-Bed Reforming Operation and Effect on Deposits in Apparatus and Mains"; "Problems Encountered in Fuel-Bed Reforming"; "Purification"; "Wrinkles" Such as Repairing Heavy Equipment Without Welding or Brazing and the Spraying of Refractory Cement to Repair Linings and Superheater Arches"; "Effect of Natural Gas Reforming on Refractory Linings and Checker Brick"; "Economies in Use of Natural Gas"; and "Plant Waste."

Safety is to be featured at each luncheon conference.

Engineering for safety

The Wednesday morning general session will open with the presentation of a paper by W. H. Kramer, district manager, sales department, Phillips Petroleum Co., New York, "Sound Engineering Spells Safety in LP Gas Plants." Mr. Kramer is a member of the A. G. A. Subcommittee on the Use and Handling of LP Gases. Time is being allowed for discussion after he completes his presentation.

"Training of Personnel for Operation of LP Gas Plants" will be explained by S. C. Symnoski, assistant superintendent, The Philadelphia Gas Works Company. Mr. Symnoski is also a member of the

Subcommittee on the Use and Handling of LP Gases. His address will be followed by one by Dr. O. W. Lusby, research department, Consolidated Gas Electric Light & Power Co. of Baltimore, on "Oil Fogging Equipment and Operation at Baltimore."

"The Builders' Subcommittee Report" will be presented by the chairman of that group, C. A. Schlegel, vice-president and general sales manager, United Engineers & Constructors, Inc., Philadelphia. Mr. Schlegel is also a member of the A. G. A. Gas Production Committee and of the Managing Committee of the Operating Section.

Hermann Laudani, chairman, will give the Tar Dehydration Subcommittee's re-

port. He is assistant superintendent, Malden (Mass.) & Melrose Gas Light Company. Mr. Laudani is also a member of the A. G. A. Gas Production and Chemical Committees.

"Controlling Nuisance Odors at Odorization Stations," will be discussed by Paul L. Covell, superintendent of production, Minneapolis Gas Company. Mr. Covell is a member of the Chemical Committee's Subcommittee on Odorization of Gas Production.

Four luncheon conferences on Wednesday will complete the program of the 1952 Production and Chemical Conference.

The Carbonization and Coke Subcommittee's luncheon conference will be pre-

sided over by J. M. Spees, Koppers Company, Inc., Kearny, New Jersey. J. F. Farnsworth, of the same company's Verona, Pa., organization will be alternate luncheon chairman. Discussion topics will include: "Safety;" "Air Pollution in a Coke Plant;" "Training of Personnel;" "The Optimum Quantity of Ash in Coke for Blast Furnace Use;" "The Importance of Cell Structure of Coke for Various Uses;" and "Unusual Operating Problems Encountered in the Industry."

F. E. Vandaveer, director of laboratories, The East Ohio Gas Co., Cleveland, and chairman of the Subcommittee on Chemical Luncheon Conferences, will be chairman of the luncheon conference

(Continued on page 46)

Launch study of gas heating economics

Despite the recent record expansion of gas facilities, and the fact that over nine million homes in the United States enjoyed gas heating in 1951, the unprecedented demand for that service still presents major policy problems to gas utility managements. Indeed, this fuel has now become the most popular automatic heating medium, as indicated by the fact that notwithstanding some local gas restrictions, it was used in more newly constructed private homes in 1950 than all other fuels combined. This achievement is all the more noteworthy when it is remembered that in many rural areas and small communities utility gas service is not available.

This unabated demand for gas space heating has been created by various circumstances, some of which are regional while others—such as the advantages of cleanliness and utmost automaticity—prevail throughout the country. Service restrictions and pending application lists are repugnant to gas utility managements anxious to meet consumer demands at rates which are reasonably remunerative to the companies and acceptable to the customers. In their endeavor to provide necessary new facilities, executives of individual utilities are concerned with a determination of the extent of their ultimate gas heating market and the effects upon the operating and financial results of their companies at the progressively greater degrees of heating saturation.

Knowledge of the importance of this problem prompted the joint recommen-

dation of the Association's Committee on Economics and Rate Committee to the Executive Board in August 1951 that a study of the economics of gas heating and related load characteristics be undertaken as an industry-sponsored project. The proposal was approved by the Executive Board, and active work was started recently. Staff work is being done by Otto E. Zwanzig, director, A. G. A. Bureau of Statistics, and by Herbert C. Mendell, who was added to the A. G. A. staff specifically to devote his entire time to the project.

Form steering committee

A joint working subcommittee, with equal representation from each of the two sponsoring committees, was created to provide guidance and supervision of the objectives and procedures for the staff members. This group consists of E. M. Borger, president, The Peoples Natural Gas Co. and chairman, A. G. A. Committee on Economics; and B. P. Dahlstrom, assistant rate engineer, The Public Service Electric and Gas Co. and chairman, A. G. A. Rate Committee. Other members are E. R. Conner, vice-president, Columbia Gas Service Co.; J. R. Gardner, assistant secretary and treasurer, Central Hudson Gas & Electric Co.; G. C. Griswold, assistant vice-president, The Brooklyn Union Gas Co.; W. J. Herrman, vice-president, The Southern California Gas Co.; G. A. Morgan, superintendent, market research department, The Peoples Gas Light &

Coke Co.; W. B. Tippy, vice-president, Commonwealth Services, Inc.

The Executive Conference on the Economics of Gas Househeating was held in Chicago late in November 1951. Since then numerous member companies expressed their interest in this undertaking, as well as their willingness to furnish information relating to various facets of the historical and prospective growth of the gas househeating market and of the procedures adopted to meet that demand. Such cooperation is appreciated—particularly in view of the additional burdens imposed upon already busy staffs—and essential if the project is to provide practical working tools for individual managements in projecting future househeating loads and the means for accommodating them economically. Several companies have already undertaken studies involving special aspects of the project. In doing so, they have already found that the mere gathering of requested data for this industry effort is bringing to light certain hitherto unrecognized aspects of immediate interest within their own organization.

It is expected that Mr. Zwanzig or Mr. Mendell will communicate with, and visit a number of other gas companies throughout the country to secure their assistance.

While it is anticipated that the project will require between two and three years for its completion, present plans call for the publication of a series of interim reports as specific phases are completed.

Industry news

SGA convention to stress sales

THE SALESMAN'S JOB will get the spotlight at Southern Gas Association's 44th annual convention April 28-30, in Galveston, Texas. Convention sessions will be held at the Buccaneer and Galvez Hotels, and on the Municipal Pier. An attendance of 1,600 delegates from 14 states is expected to participate in this year's program, which will feature outstanding speakers from within and without the industry.

Dale E. Frieden of Zenith Gas System, Inc.,

Alva, Okla., is general convention chairman. Sessions of the sales section have been combined for the first time, and a single meeting will replace the usual separate gatherings of the commercial sales, home service, advertising and residential sales groups. Industrial salespeople will retain their own meeting, however. In addition, there will be specialized programs for the distribution and transmission sections, the accounting section and the employee relations section. An accident prevention forum, an industrial sales forum and a home service luncheon have also been planned to appeal to particular groups attending the convention.

The general sessions will be held on Tuesday and Wednesday, April 29 and 30. The program includes speeches by Mayor Herbert Y. Cartwright of Galveston; C. H. Zachry, president of the host company, Southern Union Gas Co.; Southern Gas Association President L. L. Dyer and Robert R. Suttle, SGA managing director. A feature of the program will be an address, "The Path to Progress," which will be delivered by the president of the American Gas Association. His address will be followed by a talk by Gerry Swinehart, president of Carl Byoir & Associates, New York.

The second meeting of the general sessions



L. L. Dyer



D. E. Frieden

will also stress the sales theme. Speakers will be Chester L. May, vice-president, Lone Star Gas Co., Dallas; Edwin Vennard, vice-president, Middle West Service Corp., Chicago. This program, to be followed by an election of 1952-53 members and presentation of awards.

One of the important speakers from outside the industry will be Lieutenant General Ernest O. Thompson, member and former chairman of the Railroad Commission of Texas, who will speak at a joint distribution-transmission-employee relations luncheon on Tuesday, on the dangers of federal interference in the affairs of state regulatory bodies.

Sales Conference recommendations

CONTAINING RECOMMENDATIONS of far-reaching importance to the gas industry, *Memo No. 2 to the Chief Executive* summarizes results of the second Executive Sales Conference. Held in Chattanooga during September 1951, the A. G. A.-sponsored conference was held exclusively for top executives.

Included are positive ideas on utility and manufacturer responsibility in building the gas load; gas appliance merchandising; protection and development of commercial cooking loads; house heating problems; national advertising and promotion investment. Recommendations

were also set forth concerning gas appliance servicing; dealer assistance; salesman training and supervision; gas refrigeration; and industrial gas problems.

The report has been circulated to gas industry executives; Gas Appliance Manufacturers Association is distributing copies to executives of manufacturer members.

Copies are being supplied to member company sales managers, as well as members and chairmen of the Laboratories Managing Committee and the various Laboratories subcommittees.

Procurement is theme

MATERIAL procurement for defense activities will be the most important topic at the April 27-30 meeting of A.G.A.'s Materials and Supplies Committee in Memphis.

The tentative program consists of a panel which will present and discuss the current and future materials outlook; reports by the Standard Packaging and Material Handling Service Committees; and a panel on material control.

Sponsored yearly by the Accounting Section the meeting attracts all concerned with materials used by the gas industry.

Blue flame dominates home builders show

MORE THAN 20,000 architects, builders, and other visitors jammed Chicago's Conrad Hilton and Congress Hotels during the 1952 National Association of Home Builders Show late in January.

Representing the gas industry, A.G.A. and GAMA exhibitors took a total of 19 booths, to become the biggest space buyer for the first time since the show was started years ago.

The A.G.A.-GAMA exhibitors who combined forces were: Bendix Home Appliance Co.; Blackstone Corp.; Chambers Corp.; Cribben & Sexton Co.; Hamilton Manufacturing Co.; Hardwick Stove Co.; Magic Chef, Inc.; Rheem Manufacturing Co.; Ruud Manufacturing Co.; Servel, Inc., and Western Holly Appliance Company.

Cabinet manufacturers who cooperated were: Kitchen Maid Corp.; Lyon Metal Products, Inc.; Mutschler Brothers Co.; and Toledo Desk and Furniture Co.—Noma Estate.

Total industry space cost about \$11,000. Exhibitors felt that, because the gas industry's coordinated display dominated the show to such a degree, the sales promotion benefits were obviously greater than ever before.



Birdseye view of American Gas Association—Gas Appliance Manufacturers Association kitchen and laundry exhibits at National Association of Home Builders Convention and Exhibit, Chicago. Gas industry occupied 19 booths, paid \$11,000 for space, for first time was show's largest exhibitor

Mexican gas supplies proposed for U. S. industry

MEXICAN export of natural gas to the United States is seen as a distinct possibility by Senator Antonio J. Bermudez, director general, Petroleos Mexicanos. He told of the availability of natural gas in Mexican fields while addressing a "Friendship Luncheon" given in his honor by John B. O'Connor, executive vice-president, Dresser Industries, Inc., in Dallas, March 3.

"There is a great deal of oil and gas in Mexico . . . within a stone's throw of the border," he told the luncheon group. "Surplus gas from this source could come north to help U. S. industry."

Petroleos Mexicanos (Pemex), Mexico's government-operated oil organization, has discovered four major gas-producing fields, two of them in the northeastern portion of the country. "We have an available production of 315,000,000 cubic feet of gas in northeast Mexico, and we have a likewise amount in southern Mexico.

"We have enough gas, as of today, to supply our domestic demands in northeastern Mexico, and . . . a sizable amount . . . available for export. We have an available production of 315 million cubic feet of gas in northeast Mexico, and a like amount in south-

ern Mexico. We have 10 rigs operating in northeast Mexico and . . . we expect to find new fields this year and increase our availability of gas . . . and increase our reserves.

"We have 111 rigs, drilling rigs and work-over rigs. During the last five years of operation, we have built over one thousand miles of pipelines for gas and oil. . . . The pipeline across the Isthmus . . . connecting . . . Coatzacoalcas with Salina Cruz . . . is of great importance to operations in Mexico. I think that eventually it will be of great international significance because it is the only existing pipeline connecting Atlantic and Pacific."

Guidebook helps customers get most from gas service

CUSTOMERS of Portland (Oregon) Gas & Coke Co. are probably among the best informed householders as regards getting the greatest enjoyment and use from their gas service at the lowest possible cost.

Each of this utility's one-hundred thousand customers has been furnished a copy of "Your Gas Service Guidebook," along with a letter explaining its value and use. "It is a book of facts," says the letter, "simply stated and il-

lustrated. It tells you how your gas meter works, how bills are figured, how our home service department can serve you and about adjustment of appliances with the advent of natural gas.

"It gives you an easy-reading summary of the important features of gas appliances, and explains the free services we offer to help insure their year-in, year-out dependable operation."

The customer is invited to read the guide-

book thoroughly and then to save it for reference. And, for further information, he is invited to mail in the postage paid question-form card which is a part of the rear cover.

The booklet is attractively printed in three colors and effectively illustrated with line drawings. The cover is a high gloss coated stock, printed on the front in over-all black with white reverse title and art work and with a blue flame keynote.

Aid 20th student

FREDERIC N. SCHNEIDER is the 20th student to receive financial aid since the creation of the Natural Gas Department's Supply Men's Fund. Mr. Schneider is doing research work at The University of Oklahoma on multiphase co-current fluid flow horizontal pipe.

The Supply Men's Fund was set up to assist worthy students to further their education preparatory to entering the gas industry. To date, the 20 students have received 32 grants amounting to \$16,210. At least 17 of them are now working for natural gas companies, oil companies, engineering schools, or other organizations servicing the gas industry. Several have risen to high executive positions.

The Supply Men's Fund Committee, under Chairman Dorr P. Hartson, vice-president and general manager, Equitable Gas Co., Pittsburgh, is constantly seeking promising students, preparing to enter the natural gas industry, who are in need of financial assistance. Recipients are granted fellowships for post graduate work in varying amounts, depending upon the income from the fund, at The University of Oklahoma and The Pennsylvania State College. The Supply Men's Fund was established in 1927.

Practical sales training course begins



Sol W. Weill, Geo. D. Roper Corp., delivers welcome message to first session of practical sales training course for gas appliance dealers conducted by City College of New York at Public Service Electric & Gas Co., Newark. Offered now in Brooklyn and Newark, the eight weeks pilot course will serve as basis for national program by Association of University Evening Colleges, GAMA and A. G. A.

TV sells blue flame to Capitol homemakers

HOME SERVICE + celebrities + TV + gas flame = ?

The answer to this riddle is Washington Gas Light Co.'s outstanding television promotion which can be seen Monday through Thursday at 9 a.m. over a major network.

Margaret Matthews and Frances Young, of the utility's home service department, present the program to residents of the Capitol with the primary aim of selling gas. But in the bargain, viewers are treated to New Freedom Gas Kitchen and Laundry planning ideas, reci-

pes, menus, information on food, fashion, home furnishing and recreation.

On the air waves since summer 1951, as half of a program called "Nancy's Notebook," the utility's TV promotion is a remarkable example of industry cooperation. The utility furnishes cabinets, appliances and the home economist who presents a daily recipe or menu idea. Several appliance manufacturers combined forces to buy one-minute commercial time for 26 weeks. The kitchen and laundry are available for use as a prop by other spon-

sors—food processors and stores—who use the TV studio for other programs.

The program has attracted such guests as Michael DiSalle of OPS, Howard Mitchell, National Symphony director, and Doris Day of movie fame, as well as many others.

And so, home service + celebrities + TV + gas flame = more than an ordinary daytime program. Each day, it adds up to more listening and viewing pleasure for the citizens of Washington, D. C.

Accountants formulate plans for credit session

CREDIT AND COLLECTION problems will be studied by public utility accountants from every section of the United States during a utility group session to be held in conjunction with the National Retail Credit Association's 38th International Consumer Credit Conference. The conference will meet at the Statler Hotel in Washington, D. C., June 23-26, 1952.

R. H. Kanies, credit manager of Milwaukee Gas Light Co., is chairman of the committee which planned the session. The program includes 20-minute paper presentations, and 20-minute open discussions on each subject.

Scheduled for study are "Credit and Collection Problems in Washington, D. C.," "The Operation of the Economic Stabilization Board—Public Utility Branch," "Collection of Off Service Accounts," "Telephone Collection Follow-up," and "Employee Training."

The general plan of the program will follow that of the utility session during last year's meeting in Chicago. At that time, it was discovered that "talking shop" during luncheons and open sessions was enthusiastically received, and the 1952 program will feature this approach.

Working with Mr. Kanies to plan a profit-

able and absorbing program are C. R. Clarke, Brooklyn Union Gas Co., co-chairman; W. C. Young, Washington Gas Light Co., co-chairman; C. A. Burns, Union Electric Co. of Missouri; H. A. Hoppus and J. K. Jordan, Michigan Consolidated Gas Co.; J. E. Malone, The East Ohio Gas Co.; R. B. Mitchell, The Peoples Gas Light & Coke Co.; E. W. Mueller, Laclede Gas Co.; B. R. Oestreich, Wisconsin Power & Light Co.; V. F. Willie, Commonwealth Edison Co.; J. Everett Swanson, Minneapolis Gas Co.; Harry Hahn, Ohio Fuel Gas Corp.; and A. E. Press, Utah Power & Light Company.

Pennsylvania conference stresses sales

THERE'S SELLING to do in '52" is this year's pass-word of the Pennsylvania Gas Association. Gathering for the association's mid-winter conference at Philadelphia's Benjamin Franklin Hotel on February 1, over 400 gas industry men and women were greeted by William H. Regan, chairman of the association's sales promotion committee.

The meeting's theme, "There's Selling to do in '52," was highlighted in a skit, enacted by a group led by Gordon Jones, sales promotion manager of United Gas Improvement

Company. The home service department of the Equitable Gas Co., Pittsburgh, through a demonstration entitled "Seeing is Believing" presented the comparative values of gas and electric cooking appliances.

Mort Farr, president, National Association of Retail Dealers of America then spoke on "The Dealer Looks at the Gas Industry"; Gordon M. Jones, United Gas Improvement Co. delivered an address "Eastern Pennsylvania Gas Promotion"; and Howard D. Valentine, director of sales promotions, The

Peoples Gas Light & Coke Co., Chicago, had as his topic "Salesmanship at the Crossroads."

At the luncheon following the meeting, Willard Colvin, sales manager, Consumers Gas Co., Reading, presided, with remarks by W. E. L. Irwin, president, The Pennsylvania Gas Association and by H. Carl Wolf, managing director, American Gas Association. The final presentation was given by Alfred P. Haake, Ph.D., economist, consultant and lecturer of Park Ridge, Ill. who spoke on "Selling Can Save America."

Kansas City safety contest gains momentum

IN THE SPRING A YOUNG MAN'S fancy turns to—safety! At least that's the case in Kansas City, Mo., where employees of The Gas Service Co. are participating in a six-month contest to cut the number and frequency of lost-time accidents to the barest minimum.

Based on simple rules, the contest began on January 1 and will continue until June 30. Each of the five departments in the operating division have been divided into several teams. Scores will be posted monthly, and at the end of the contest, a total of at least eight teams will be honored at a congratulatory dinner.

Each will be awarded a team certificate for display, while every man belonging to a winning team will be given an individual certificate denoting his part in the safety campaign. To be absolutely fair, intradepartmental competition has been set up because hazards involved and safety precautions necessary are so varied.

Charles Williams, safety director of the Kansas City, Mo. division of The Gas Service Co. is supervising the contest. Mr. Williams states that the "success of the contest depends entirely on the cooperation of the men who make up the teams." So far, the men have been cooperative . . . to the extent that the accident rate has decreased almost unbelievably. With only two lost-time accidents between January 1 and February 18, 1952 as compared with 15 for the same period last year, The Gas Service Co. is looking forward to a safe springtime—and an enviable, low accident record.

World's biggest bake-off cooks with gas



The world's biggest bake off, with 120 men and women baking simultaneously on 120 gas ranges to determine the best lemon pie and orange cake makers, was the outstanding event of the spectacular National Orange Show, San Bernardino, California, March 11. Sponsored by Southern California Gas Co. and Southern Counties gas companies, Gas Appliance Manufacturers Association and Sunkist Growers, Inc., the contest featured a 904 pound orange cake and a 1,816 pound lemon pie. Later they were sliced with a saw, the pieces hoisted with a fork lift truck and distributed to Army camps

Open drive

A REPLACEMENT PROGRAM, which is expected virtually to double the production of glass-lined (Permaglas) water heaters, has been started by the A. O. Smith Corp., Milwaukee. To be conducted at a cost of about \$600,000, the promotion program is expected to increase output from 26,000 units per month to 50,000 units. The drive will be run through 1952.

Improved production methods are being installed to counterbalance the premium labor costs that will result from running extra shifts to gain this increased production. The improvements will step up tank production to the rate of four each minute.

Research conference

EXPERT technicians will address the American Gas Association's 1952 Domestic Research and Utilization Conference at the Hotel Statler, Cleveland, Ohio, June 5 and 6, 1952 on many important subjects. Sponsored by the A. G. A. Domestic Gas Research Committee, of which H. A. Eddins, Laclede Gas Co., St. Louis, is chairman, this is the only national conference in the gas industry devoted to the technical aspects of appliances and the utilization of gas.

Leon Ourusoff, Washington Gas Light Co., is chairman of the program committee. His group is completing a list of events that will include clinics, panel sessions, luncheon conferences and technical and non-technical papers. The program is designed for gas appliance manufacturers, gas company utilization, service and installation personnel. Sales and operating personnel also will find interesting subjects discussed.

Among the many important subjects to be reviewed in the two-day conference are corrosion characteristics of materials used in heating equipment manufacturing; multi-storey venting; safety practices in service work; and combustion characteristics of fuel gases.

Several additional subjects of both technical and non-technical nature are under consideration by the program committee.

Cities Service gives school kids piece of pipeline



A historic piece of natural gas pipeline now belongs to New York City's school children. At a ceremony on February 25, Burl S. Watson (center) executive vice-president of Cities Service Gas Co., presented the wooden section to David H. Moscovitz, assistant superintendent of city schools. Charles F. Beck (far left) museum director; Samuel Shenberg (right) science supervisor; and L. T. White (far right) director of business research and education, Cities Service Gas Co. were present. Dug up after 60 years underground, the pipeline ran 25 miles from a natural gas producing well into Rochester, New York. Of Canadian white pine, the sections were held together by iron bands and caulked with Civil War blankets soaked in Tar. The pipe was still in almost perfect preservation because of the tar joint seals.

A. G. A. announces new publications

LISTED HERE are publications released by American Gas Association during February and March, up to closing time of this issue of the MONTHLY. Information in parentheses indicates audiences for which each publication was designed.

Laboratories

- **Comparative Study of Various Methods of Cooking—Part II—Heat Application in Gas Oven Cookery**, Research Report No. 1182 (for manufacturers and utilities). Prepared by the Committee on Domestic Gas Research, and available from the A. G. A. Laboratories, 1032 East 62 St., Cleveland, for one dollar.

Rate

- **Report of Rate Committee, 1951**. Prepared by the Rate Committee, and available at A. G. A. Headquarters for one dollar a copy.

The report includes a subcommittee report on gas house heating rates which draws conclusions and cites examples of interest to those faced with pricing problems for space heating service. It includes also a subcommittee report on rate adjustment clauses analyzing adjustment clauses as of December 31, 1950 according to factors on which adjustments are based.

Personnel

- **Personnel Testing in the Gas Industry**. Prepared by the Personnel Committee, and available at A. G. A. Headquarters. One dollar to non-members, 50 cents to members.

Promotion

- **Spring Style Show Portfolio** (for utilities and dealers). Sponsored by A. G. A., the portfolio can be obtained from the Promotion Bureau for 25 cents.

- **Dealer Broadside** (for utilities and dealers). Sponsored by A. G. A., and available from the Promotion Bureau for \$10 a hundred.

- **Display Kit** (for utilities and dealers). Sponsored by A. G. A., available from the Promotion Bureau, and priced at \$7.15 each.

Statistical

- **Monthly Bulletin of Utility Gas Sales—January 1952** (for sales managers, statisticians, banks, investment houses, newspapers, appliance manufacturers). Prepared by the A. G. A. Bureau of Statistics, and available from Headquarters, free.

- **Quarterly Report of Utility Gas Sales—4th Quarter, 1951**. Prepared by the A. G. A. Bureau of Statistics, this report contains preliminary 1951 calendar year data on customers, sales and revenues, by class of service. Available from A. G. A. Headquarters, free.

Colorado utility cited by Freedoms Foundation

IN RECOGNITION of its efforts to stimulate interest in the early history of Colorado and in the principles on which the state was founded, Public Service Co. of Colorado has been awarded the highest of 1951 Freedoms Foundation's awards.

John E. Loiseau, president of the company, accepted the award at Valley Forge, Pa., on February 22 from Dr. Robert A. Milliken, who made the presentation in behalf of Freedoms Foundation.

The prize-winning exhibition is "The Colorado Story," a gallery display of 50 panels carrying the picture story of Colorado from

pre-historic Folsom Man until statehood was achieved in 1876. The panels are mounted on 26 colorful display backgrounds that are 28 inches wide and 48 inches long.

"The Colorado Story" stresses the pioneer accomplishments of American citizens, who hewed a commonwealth out of mountain, plain, forest and desert. It also shows the relationship of this early pioneering to the present time from the point of view that the pioneers laid the foundation of our state government.

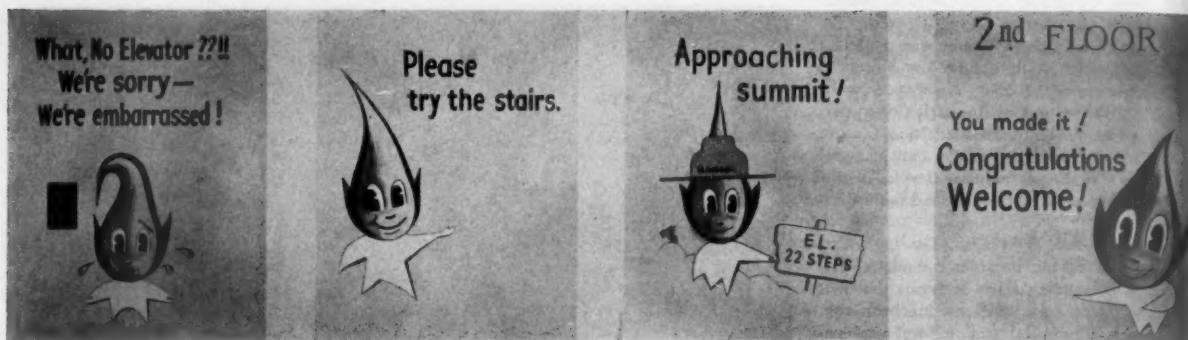
Featured "players" in the inspiring story of a great state are the early settlers who will-

ingly made many sacrifices, braved countless dangers and displayed rugged individualism while conquering the wilderness.

Included in the displays are early photographs and etchings, historic documents in facsimile, and original letters, documents and signatures. Many of the items are actually museum pieces.

Material for "The Colorado Story" was gathered from a total of 13 national, state and city libraries, most of which are in Washington, D. C., and New York, N. Y., and also from various private collectors of Americana.

Blue flame pixies cheer Seattle climbers



When Seattle Gas Co. moved to new second-story headquarters last Autumn, employees found themselves in a tight spot. The setup was beautiful—show-rooms, headquarters for sales, customer and home service activities—but because of a strike-bound factory, one big item was missing: an elevator! President N. Henry Gellert and Vice-Presidents Charles M. Sturkey and Norbert O. Pratt did some fast thinking to meet the emergency. A temporary cashier's cage was built on street level, to accommodate bill-paying customers, but the unavoidable flight of stairs remained for those who sought other services. A series of seven amusing pixies have helped Seattle climbers, but the utility is looking forward to retiring them when the new elevator starts operating.

Manufacturers announce new products

● **Home cooling unit**—The Coleman Co., Inc., introduces, in limited production, a cooling unit to be used with its line of gas and oil-fired home heating equipment. Developed in two- and three-ton sizes to provide year-round climate control for homes and small commercial buildings, the unit dehumidifies and circulates cool air using wintertime distribution system. Sales will be channeled into areas having high summer temperatures.

● **Gas water heater**—The Clark Division, McGraw Electric Co., will produce a line featuring a fuse-bonded, aluminum lined external flue and raised port precision drilled

burner. Heater is insulated and can be equipped with magnesium rod for corrosion prevention. Can be used with natural, mixed, manufactured or liquid petroleum gas.

● **Controlled-temperature grill**—Developed by Chambers Corp., for new counter-level built-in gas ovens, new grilling method combines best features of grilling and broiling.

● **Kitchen heater-range**—Caloric Stove Corp. has perfected a "CP" model which combines convenience of table-top range and kitchen heater. All ignition automatic, with thermostatic room temperature control.

Available by April 1, model is built to use natural, manufactured or LP-gas.

● **Combination gas-oil burner**—Eclipse Fuel Engineering Co., Rockford, Ill., industrial and commercial heating equipment manufacturers, announces Fyr-Matic, which can alternate fuels. Burner has snap-switch for immediate conversion, and is being sold as a complete package with no extras. Mixed natural, LP gas or number 1, 2, or 3 fuel oil may be used with equal efficiency. Some possible applications for the burner include steam boilers, water heaters, air heaters, heating plants, industrial ovens and bake ovens.

Handy gas computer ready for utility use

THE POCKET-SIZED Flow Computer is again available. The handy 3¼-inch by 4½-inch gadget, formerly made by Dewar Manufacturing Co., has long been popular with gas

utility personnel. It indicates gas flow in cubic feet per hour for pipe diameters from ¾ inch to six inches, and for pipe lengths from 10 feet to 1,000 feet.

The Flow Computer can be obtained from V. E. Briggs, P.O. 346, Jackson Heights, New York. The charge is \$2.50 for three, or \$1.00 each.

Ebasco sponsors fifth safety seminar

EBASCO SERVICES, INC., New York, conducted its fifth annual Seminar in Public Utility Safety in cooperation with New York University, February 18-29. Attended by safety and operating executives from the United

States, Chile, Brazil and Mexico, the sessions covered every phase of safety education from effective training to fire prevention.

The seminar staff consisted of: several Ebasco safety experts including: William T.

Rogers, safety consultant; George G. Blair, Eugene M. Flory, engineers, insurance department; James G. Sealy and Joseph F. Gordon, safety engineers. Also on the staff were prominent New York University educators.

Current statistics of the gas industry

● **Utility gas sales**—January, 5,645 million therms, up 11.1 percent from 5,077 million therms in December 1951, and up 10.0 percent over 5,134 million therms in January 1951.

● **Gas-fired central heating equipment**—February preliminary, GAMA figures, 32,300 units, down 10.8 percent from 36,200 units in January and down 41.2 percent from 55,000 units in February 1951 (Breakdown: 20,800 gas-fired furnaces—forced warm air and gravity; 3,500 gas-fired boil-

ers; 8,000 gas conversion burners).

● **Oil-fired burner installations**—January 1952 GAMA figures, 48,145 installations.

● **Domestic gas range shipments**—February preliminary, GAMA figures, 150,400 units, down 2.1 percent from 153,600 units in January and down 40.8 percent from 254,000 units in February 1951.

● **Electric range shipments**—GAMA figures for January, 92,400 units, up 14.3 percent over 80,800 units in December but

down 36.7 percent from 146,000 units in January 1951.

● **Automatic gas water heater shipments**—February preliminary, GAMA figures, 146,100 units, down 2.8 percent from 150,400 units in January and down 31.5 percent from 213,400 units in February 1951.

● **Electric storage water heater shipments**—January GAMA figures, 48,700 units up 8.9 percent from 44,700 units in December 1951 but down 47.5 percent from 92,700 units in January 1951.

New Orleans utility announces executive promotions

W. J. AMOSS has resigned as vice-president in charge of advertising for New Orleans Public Service, Inc. **J. Mason Guillory** succeeds him as director of advertising. Following Mr. Guillory's promotion, three other personnel changes were announced in the utility's industrial and utilization department. **John F. Morton** was promoted to manager of the industrial division, **James L. Campbell** was named manager of the commercial division, and **Charles J. Sinnott** was advanced to manager of the residential division.

Mr. Amoss, who has served New Orleans Public Service since 1931, resigned to become executive vice-president of a Louisiana company engaged in the research and manufacture of plastics and paper pulp from agricultural products.

Mr. Guillory also has been with Public Service since 1931, serving in engineering and sales positions. In 1940 he was named man-

ager of the industrial and commercial division of the industrial engineering and utilization department.

A graduate of Tulane University, Mr. Guillory is active in engineering and utility industrial organizations. He is a member of the American Gas Association, and is currently serving on the Industrial and Commercial Gas Section's Managing Committee. He is active also in Southern Gas Association and Edison Electric Institute, and in 1949 received the national first prize in the EEI commercial lighting competition. In addition, he is a past chairman of the New Orleans chapter of the Illuminating Engineering Society and regional vice-president of its southeastern region and a member of the Southeastern Electric Exchange.

Mr. Morton, the new industrial division manager, is a graduate of Hampden Sidney College, Virginia. He has served New Orleans Public Service since 1934, and at the time of

his latest appointment was industrial supervisor.

Mr. Campbell, now manager of the commercial division, came to Public Service in 1931, after receiving a degree in electrical engineering from North Carolina State College. He served for five years as manager of the promotion and research division and became manager of the residential division in 1950, the position he held at the time of his new promotion.

Mr. Sinnott, who received his education at Tulane University, came to Public Service in 1937. Before entering the armed forces in 1942, he served in the commercial division, and upon his return was transferred to the residential division. In 1947 he became general residential supervisor, the position in which he served until the promotion announcement.

Personal and otherwise

Natural gas utility promotes

THE PEOPLES NATURAL GAS CO., Omaha, has announced two executive promotions. **Richard Bernard** has been named assistant to **Ray Harrison**, vice-president and general manager in Omaha. Mr. Bernard had

been serving, at the time of his promotion, as district manager in the company's Ralston, Neb., office. He has worked for the utility since 1935, starting as a storekeeper-salesman.

Art Brownlee, assistant district manager at

Association and is active in the Operating Section's Distribution Committee as well as the Subcommittee on Safe Practices in Distribution. He is also a member of the Engineers' Society of Western Pennsylvania and the Pennsylvania Natural Gas Men's Association.



T. H. Kendall

Hiram Carson resigns from Northern Natural

AFTER A LONG and distinguished career in the utility industry, **Hiram J. Carson** has been granted a leave of absence at his own request. He has resigned his positions as first vice-president and director of Northern Natural Gas Co., as well as director of the subsidiary, Peoples Natural Gas Co., Pittsburgh. The leave of absence will be effective until Mr. Carson's retirement date in December 1952.

One of the most prominent leaders in the gas business, Mr. Carson is the holder of the industry's highest honor—the Distinguished Service Award. He received the award in 1951 for his contribution toward the advancement of the natural gas industry.

Mr. Carson has served electric and gas utilities since 1911, when he became a cadet engineer with Peoples Light Co., Davenport, Iowa, following his graduation from Iowa State College. After several promotions, he was named general manager of the Cedar Rapids Gas Co. in 1915. In the army for two

years during World War I, he resumed this position when he returned from service.

Mr. Carson joined Northern Natural in 1930, the year in which the company was incorporated. During the utility's early years, Mr. Carson devoted his energies to building desperately needed loads. He has had general supervision of the development of Northern Natural's system from a capacity of about 80 million cubic feet per day to the present 675 million cubic feet. Mr. Carson has served as chairman of the company's rate and engineering committees, as well as chief engineer, superintendent of operations, vice-president, vice-president in charge of operations and first vice-president. He has been a director of Northern Natural Gas Co. and Peoples Natural Gas Co. since 1942.

He is a registered professional engineer, and is well known for his work in the fields of dehydration, hydrogen sulphide removal and the all-welded large diameter pipeline.

Ralston, has succeeded Mr. Bernard as district manager. Mr. Brownlee joined Peoples Natural almost 10 years ago as a service man, and at the time of his latest promotion was employed as Mr. Bernard's assistant.

He has served as president of the Midwest Gas Association and as chairman of the Midwest Natural Gas Supply Committee for the War Production Board.

An active member of American Gas Association, Mr. Carson had been chairman of the Natural Gas Department's Transmission Committee for three years. At present, he is a member of the Association's General Research Planning Committee, and the Natural Gas Department's Task Committee on Gas Pipeline Safety Requirements. He is also a member of the Technical and Research Committee, and is serving this year as chairman of the Nitrogen Removal Subcommittee.



Hiram J. Carson

Pittsburgh affiliates report employee promotions

SEVERAL PERSONNEL changes have been announced by The Peoples Natural Gas Co. and New York State Natural Gas Corp., both of Pittsburgh.

The Peoples Natural Gas Co. reports that Charles V. Hoey, Pittsburgh, has been named assistant personnel director, Richard E. DuVall has been appointed assistant superintendent of distribution, and George K. Kline has been promoted to chief engineer.

Mr. Hoey, a graduate of DePauw University, has served Peoples for 15 years. He was formerly head of the warehouse-voucher and

accounts payable sections of the company's treasury department. Mr. DuVall was chief engineer before his recent promotion. A graduate of the University of Delaware, he too, is a veteran of 15 years' service. Mr. Kline, who joined the company in 1946, graduated from the University of Pittsburgh with a petroleum engineering degree.

New York State Natural Gas Corp. has promoted Eugene R. Seifert to the office of land agent and Richard J. Murdy has been appointed chief geologist.

Mr. Seifert's duties will include supervision

of all land matters, including land and lease and right-of-way departments. Before his promotion he was a district superintendent. He began his service with Peoples Natural Gas Co. in 1924, after attending Washington and Jefferson College. Mr. Murdy will be responsible for the geological phases of New York State Natural's work in exploring and developing new gas reserves, for the designing of underground storage pools. He received B.S. and M.S. degrees from the University of Pittsburgh as a petroleum geology major.

Rincliffe named Philadelphia Electric president

R. G. RINCLIFFE has been elected president of Philadelphia Electric Co., succeeding H. B. Bryans, who has retired to serve as vice-president and director of United Engineers and Constructors, Inc., also of Philadelphia.

Mr. Rincliffe joined the utility in 1923 as an engineering assistant. He progressed through several positions including superintendent of gas manufacturing, purchasing agent, manager of electric generating stations, and vice-president in charge of electric operations. He became a director and executive vice-president in 1950.

Mr. Rincliffe is a graduate of Yale University and the Massachusetts Institute of Technology. He is a vice-president of the Penn-

sylvania Electric Association, and is a member of American Gas Association, the Edison Electric Institute, the Pennsylvania Gas Association, the American Society of Mechanical Engineers and the American Institute of Electrical Engineers.

A graduate of the University of Pennsylvania, Mr. Bryans is a veteran of nearly 45 years of service in the public utility business. In 1929 he was named vice-president in charge of operations of the Philadelphia Electric Co., was elected executive vice-president in 1938, a director in 1940 and president in 1947.

Mr. Bryans is past-president of the American Standards Association, past-president of the Pennsylvania Electric Association, and past-president of the Electrical Association of



R. G. Rincliffe



H. B. Bryans

Philadelphia. He is a member of Edison Electric Institute and American Gas Association.

Southern Production elects Powers vice-president

ELLIOTT H. POWERS has been elected vice-president in charge of exploration, for the Southern Production Co., Shreveport, Louisiana. He will have full charge of the company's exploration activities.

Mr. Powers has been assistant division ex-

ploration advisor in the Houston division of Gulf Oil Corporation. He had served that company since 1935 as a geologist.

A graduate in geology from Texas Technological College in 1930, Mr. Powers received his master's degree from the Univer-

sity of Iowa in 1932 and his doctor's degree from the same university in 1935.

He is a member of the American Association of Petroleum Geologists, and a fellow of the Geological Society of America.

Pittsburgh Group names superintendent

H. R. WEITZEL has been named superintendent of natural gas compressor stations operated by The Manufacturers Light and Heat Co. and associated Pittsburgh gas companies in the Columbia Gas System. He succeeds M. L. Cowden, who retired March 1 after 35 years of gas company service.

Mr. Weitzel, a graduate of Carnegie Institute of Technology and a registered professional engineer, joined The Manufacturers Light and Heat Co. in 1937. He served as a senior civil engineer until entering the gas engineering department in 1946 and was advanced from power engineer to assistant superintendent of compressor stations in 1950.

Mr. Cowden was in the compressor station department of the company from 1917 until his retirement. During these years he was a supervising engineer at two compressor sta-



M. L. Cowden



H. R. Weitzel

tions until he entered the Pittsburgh general office in 1928 as assistant superintendent of compressor stations. He became superintendent in 1932.

Storage Co., since its organization in 1946.

Mr. Herringshaw has been associated in gas operations of Consumers Power Co. since 1923. He had worked in gas plants at Flint, Saginaw, Jackson, Kalamazoo and Lansing before advancement to general supervision of

Kohlhepp praised for aid

CHARLES E. KOHLHEPP, president of the Wisconsin Public Service Corp., is one of 188 American businessmen cited for his valuable contribution of time, talent and energy to the nation's defense effort. The businessmen, all executives in their respective organizations, served for six months each, without compensation, to help the government set up the defense production program.

The honors were accorded at a special luncheon in the nation's Capitol, at which secretary of Commerce Charles Sawyer praised the men for their willingness to come to Washington to help the country. Their contribution, Mr. Sawyer said, is a tribute to the patriotism of American business.

Mr. Kohlhepp is a member of American Gas Association.

gas operations in 1928.

A graduate of the University of Michigan, Mr. Herringshaw is a member of American Gas Association, and is serving this year in the Natural Gas Department's managing committee.

Herringshaw elected Consumers vice-president

DONALD E. HERRINGSHAW was elected vice-president of Consumers Power Co. Jackson, Mich., on January 26. He has headed the gas department of Consumers Power Co. since 1938, and has served as vice-president of the company's subsidiary, Michigan Gas

Executives named

FRED B. HOFFT, vice-president of Lebanon Valley Gas Co., has been elected president, succeeding William Naile, who died on February 4. M. H. Parkinson has been named vice-president. Mr. Hofft and Mr. Parkinson also serve as vice-presidents of United Gas Improvement Co., Philadelphia. Walter A. Long, U.G.I. president, will serve as a director.

Russell W. Uhler of Lebanon has been appointed to the newly created position of general manager. He started his career with Lebanon Valley Gas and Fuel Co. in 1921 as a salesman, following graduation from Lebanon Valley College. In 1923 he was named sales manager, the position he held at the time of his latest appointment. The only interruption in his career with Lebanon Valley Gas Co. was two years spent as sales manager for the Allentown-Bethlehem Gas Company.

Rogers and Darby promoted at Ohio Fuel Gas

PAUL W. ROGERS and Thomas E. Darby have been advanced to newly created positions at The Ohio Fuel Co., Columbus.

Mr. Rogers, who has been superintendent of motor transport, has been named assistant chief engineer. He will report to Wilbur T. Shinholser, vice-president and chief engineer. Mr. Rogers joined Ohio Fuel in 1933. He has been in charge of the company's 1,000 automobiles and trucks and its seven garages and has supervised welding instruction. He is a member and past-chairman of the American Gas Association's Motor Vehicles Committee.

Mr. Darby, who has been utilization engineer, has been appointed plant and service operations manager, reporting to Frank S. Williams, vice-president in charge of the distribution department. Mr. Darby started as



Paul W. Rogers



T. E. Darby

an engineer in the Columbus district office of Ohio Fuel in 1932. In his new position he will coordinate plant and service operations.

Brown succeeds Chamberlain in Milwaukee

DUDLEY B. W. BROWN, executive vice-president of Milwaukee Gas Light Co. since February, 1950 succeeds the late Glenn R. Chamberlain as president of the utility. E. Gordon Black, vice-president and treasurer, has been elected to fill the vacancy on Milwaukee Gas Light's board of directors which resulted from Mr. Chamberlain's death.

Mr. Brown joined Milwaukee Gas Light in September 1949 as vice-president, director and assistant to the president. Prior to that, he had done extensive research in natural gas distribution at Michigan Consolidated Gas Co., Detroit.

A graduate of Harvard University, he attended Harvard's Graduate School of Busi-

ness Administration and Geneva School of International Studies in Switzerland. In 1938 he was named a director of American Light & Traction Co., predecessor of American Natural Gas Co., owner of the Milwaukee utility.

Mr. Brown and Mr. Black are both members of American Gas Association, where Mr. Brown is on the Economics Committee.

Oldham and Reid promoted in Dallas utility

TWO DALLAS OFFICIALS of Southern Union Gas Co., James C. Reid and H. N. Oldham, have received promotions. The company's board of directors elected Mr. Reid to the position of executive vice-president, and Mr. Oldham vice-president and operating manager.

Mr. Reid joined Southern Union more than 16 years ago, first serving in Santa Fe as assistant operating manager. He came to Dallas in 1937 to head the company's engineering department, was made vice-president and director in 1938, and since 1943 has served as director, vice-president and operating manager.

Mr. Reid attended Southern Methodist University and graduated from Yale University. He is a member of American Gas Association.

Mr. Oldham, a graduate of the University of Arkansas, joined Southern Union more than 17 years ago. After brief service in the Dallas home office, served as industrial engineer in Santa Fe and as assistant district manager at Carlsbad before becoming district manager there. He was appointed assistant operating manager in Dallas in 1950.

Mr. Oldham is a member of American Gas Association and the American Institute of Mining and Metallurgical Engineers.



H. N. Oldham



James C. Reid

Hall and Tate advanced at Brooklyn Union

ALLAN G. HALL, general superintendent of Brooklyn Union Gas Co.'s Greenpoint works, was named assistant engineer of distribution, and William E. Tate, assistant general superintendent, moved into the post of general superintendent.

A graduate of Worcester Polytechnic Institute and Brooklyn Polytechnic Institute, Mr. Hall started with Brooklyn Union Gas Co. as a cadet in 1930. Before his latest promotion, he had spent his entire engineering career in

the utility's gas manufacture.

Mr. Hall is a member of American Gas Association, and is active in the Operating Section's Gas Production Committee.

Mr. Tate, also a graduate of Worcester Polytechnic Institute, joined the company in 1930 as a cadet, and advanced through various positions until 1950, when he became assistant general superintendent of the Greenpoint works. He, too, is a member of American Gas Association.

Reynolds advanced

ELLSWORTH G. REYNOLDS, legal and administrative assistant of Michigan Consolidated Gas Co., Detroit, has been named an assistant secretary of the company.

Mr. Reynolds joined the utility in 1948. He attended the University of Michigan, Detroit Institute of Technology and Detroit College of Law from which he graduated magna cum laude.

Mr. Reynolds is a member of the Detroit and Michigan Bar Associations.

Hawley accepts post

EDWIN E. HAWLEY, formerly chief engineer for Gasair Associates, has been elected vice-president and manager, Pacific Gas Corp., San Francisco.

Pacific Gas Corp. specializes in design, engineering and construction of LP-gas plants for industry and utilities in addition to nationwide marketing activities.

Toone advanced at Lone Star

J. L. TOONE has been named manager of the Lone Star Gas Co.'s land department in Dallas, Texas. He succeeds Percy Hall, who retired at the end of February.

Mr. Toone has been assistant manager of the department since 1950. Before that, he served in the utility's legal department, specializing in oil and gas law and land titles. He

also practiced law for three years after receiving his LL.B. degree from the University of Texas in 1926.

Mr. Toone's responsibility will include supervision of right-of-way claims and leasing operations, maintenance of gas purchase contract records and related matters.

Great Lakes Personnel Conference chooses Solon

JOHAN J. SOLON, The Peoples Gas Light & Coke Co., Chicago, has been elected chairman of the American Gas Association Great Lakes Personnel Conference. E. G. Huck, The Cincinnati Gas & Electric Co., was elected vice-chairman, and W. K. Paul, Northern Indiana Public Service Co., Hammond, was elected secretary.

Mr. Solon, who has served Peoples Gas Light since 1923, is superintendent of its employment department. He has been in personnel work since 1943, when he was named assistant superintendent of the company's personnel department. He was appointed super-

intendent of the employment department in 1946.

Mr. Solon attended Northwestern University, and has taken specialized personnel courses at the University of Chicago, Rensselaer Polytechnic Institute and Purdue University.

At the meeting held in the Palmer House, Chicago on February 21, Dr. Richard Donham, of Northwestern University, conducted a discussion on "New Trends in Executive Training." The discussion included planning for executive development; integration of company programs; use of work situations

and cases; expansion of university programs, and the development of executive skills and attitudes.

Dr. Joseph D. Parent of the Institute of Gas Technology in Chicago, described the institute's contribution to the gas industry through research and education.

Other topics discussed during the conference were contract negotiations, engineering training programs, and wage stabilization.

The next meeting of the A. G. A. Personnel Conference will be held in Chicago in June, 1952.

Haigler leaves Brooklyn

CATHERINE HAIGLER, formerly assistant home service director, Brooklyn Union Gas Co., will become director of home economics for Pet Milk Co., St. Louis, Missouri.

A graduate of Queens College in North Carolina, Miss Haigler holds an M.A. from Columbia University, New York. She has had a varied career, including two years as a high school teacher and two years as a hospital dietitian. In over five years with Brooklyn Union, she distinguished herself by her talent for conducting television theater schools.

Miss Haigler is a member of American Gas Association.

Horton succeeds Lawson in California

J. K. HORTON has been elected president of J. Pacific Public Service Co., San Francisco. He succeeds Ernest G. Lawson, who retired on March 1 after more than 40 years in the gas and oil industry. Mr. Horton was also elected chairman of the board of Coast Counties Gas and Electric Company. Since joining Pacific Public Service in 1944, he has served as corporate secretary and legal counsel. In 1951 Horton was elected executive vice-president of the corporation and its subsidiary, Coast Counties Gas and Electric.

Both Mr. Horton and Mr. Lawson are members of American Gas Association.



J. K. Horton



Ernest G. Lawson

Manufacturers announce personnel changes

● **L. J. Mueller Furnace Company**—John L. Hughes has been appointed credit manager. Mr. Hughes, a member of the Wisconsin Bar Association, was claims adjuster for an insurance company before joining Mueller Furnace.

● **Cribben and Sexton Co.**—A. T. Carrow has been appointed to the newly created post of manager of sales, with the duties of supervising national accounts, sales personnel and procedures. Mr. Carrow was first associated with Cribben and Sexton in 1929, when he joined the staff as a district manager. In 1947, he organized the Blue Star Bottle Gas and Appliance Co., and in 1949 returned to Cribben and Sexton as midwest division manager.

● **Servel, Inc.**—Theodore W. Rundell, formerly chief refrigeration engineer for Philco Corp. has been elected vice-president in charge of engineering. Dr. William R. Hainsworth, who has been vice-president in charge of engineering, has been appointed staff consulting engineer to direct long-range engineering programs in all fields. He will continue as vice-president.

Both Mr. Rundell and Dr. Hainsworth are amongst the world's foremost refrigeration engineers. A pioneer in the development of the modern household refrigerator, Mr. Rundell has many patents and inventions to his credit. Dr. Hainsworth, who has served Servel, Inc. since 1929, was awarded the Munroe Award of the American Gas Association in 1933 for his contribution to the development of the air-cooled Servel refrigerator.

● **American Meter Company**—Douglas R. Kramer has been named advertising manager. An engineer, Mr. Kramer has served American Meter since 1944. He has been instrumental in research and development work, as well as in the publication of technical literature. He is an instructor in the Gas Measurement Short Course held each year at the University of Oklahoma and West Virginia University.

● **Barber-Greene Company**—Roy C. Heacock has been promoted to chief engineer in charge of development and engineering phases of the company's activities.

Mr. Heacock joined Barber-Greene six years ago, when he organized the first training school for the men who service the company's equipment. He later served on special development projects, and until his current promotion was executive engineer.

● **Chambers Corporation**—C. E. Parson has been named advertising manager. He will coordinate national advertising and public relations programs, direct the firm's national cooking school program, and head a department which will plan and correlate dealer advertising, point-of-sale material, literature about products, sales promotion efforts.

Mr. Parson joined Chambers two years ago, after directing the advertising program of a retail appliance store, and serving as copy chief for an advertising agency in Houston, Texas.

● **International Heater Company**—W. A. Matheson, Jr. has been named vice-president in charge of sales. He will direct sale of the company's oil, gas and coal fired furnaces and boilers. He was formerly connected with the Perfex Corp. and the Williams Oil-O-Matic Division, Eureka Williams Corporation.

Burg assists Price at Connecticut utility

JOHAN W. BURG, district engineer of the company's Winsted district, has been named assistant gas superintendent. In his new position, Mr. Burg assists D. W. Price,

gas superintendent, in the operations of Connecticut Light & Power Co.'s gas and water departments.

Mr. Burg, who has been located in Win-

sted since 1937, joined the utility in 1930 shortly after graduating from Rensselaer Polytechnic Institute.

He is a member of New England Gas Assn.

Gas Service Company names home economist

MRS. MARY MARGARET SULLIVAN has been named assistant to Mrs. Helen Mandigo, home service director of The Gas Service Co., Kansas City, Missouri.

The utility also announced the resignations of Mrs. Virginia Powell Bennett and Mrs. Ruth Mary Wheeler, who had served in the home service department since 1949.

Mrs. Sullivan, who succeeds Mrs. Bennett as assistant home service director, joined The Gas Service Co. in January 1950, shortly after graduating from the University of Kansas.

Pierce heads engineering committee

H CHARLES PIERCE has been elected chairman of the newly organized engineering committee of the Air Conditioning and Refrigeration Machinery Association's residential air conditioning section. Mr. Pierce is assistant sales manager of Servel, Inc.'s air conditioning division.

The objective of the committee will be to establish application engineering standards on residential air conditioning for the entire industry.

Mr. Pierce, who received his education at Michigan State College and the University of Michigan, joined Servel in 1940. He has

served on important committees of the American Society of Refrigerating Engineers and the American Society of Heating and Ventilating Engineers. He is a member also of A. G. A.

Toler becomes consulting geologist

HENRY N. TOLER, for many years engaged in geological work in the Gulf Coastal area, has opened offices as a consulting geologist in Jackson, Mississippi. Mr. Toler recently resigned his position as chief geologist

and manager of Southern Natural Gas Co.'s production department.

An active member of American Gas Association, Mr. Toler is serving this year on the Natural Gas Department's Committee on

Natural Gas Reserves. He is also a member of the American Association of Petroleum Geologists. During 1949-50 he served as this association's secretary-treasurer and member of the executive committee.

Sulphur recovery

(Continued from page 8)

time that sulphur could be separated from hydrogen sulphide by the addition of oxygen to form water and elemental sulphur. Chemically speaking, this reaction is as follows:



(hydrogen sulphide plus oxygen from the air equals sulphur plus water.)

This chemical reaction seems most natural to the chemists who realize the great affinity between hydrogen gas and oxygen gas, but to the uninitiated it seems almost magical that a liquid (water) and a yellow solid (sulphur) can be formed from two invisible gases.

For many years almost the entire world output of sulphur came from mines in Louisiana and Texas. These underground sulphur deposits are natural formations and the extraction of sulphur by an ingenious device was developed. Hot water was introduced into the wells to melt the sulphur and compressed air forced the molten material to the surface. This method of mining reduced the price of sulphur to the point where other methods of manufacture became costly.

However, sulphur found more and more uses in industry while the supplies underground were relatively limited. It is estimated that production for sulphur at the present time is one million tons short of the present annual demand. This demand is primarily in the manufacture of newsprint (most vital to Canada's economy), in the production of sulphuric acid, in the manufacture of synthetic rubber, insecticides, fertilizers, textiles, and many other products.

The decision to install a sulphur recovery plant at Turner Valley therefore, appeared to be a most natural one, since there was an adequate source of hydro-

gen sulphide, since a world market appeared to be certain for many years to come and since the method of converting hydrogen sulphide to elemental sulphur has been tried and proved.

The first successful commercial sulphur recovery plant utilizing acid gas was designed and installed in the United States in 1944. This plant has a sulphur capacity of 75 long tons per day. Since that time several similar plants have been built and operated. The largest plant of this type was designed and installed for the Texas Gulf Sulphur Company in Worland, Wyoming. This plant has a sulphur capacity of 400 long tons per day.

To burn acid gas

In the Foster Wheeler sulphur recovery unit the acid gas, now being released to the atmosphere, will be burned with air in stoichiometric quantity to produce elemental sulphur in the reaction furnace. The vapors are cooled initially in steam generating equipment where some condensation takes place. The condensed sulphur and vapors are passed to a wash tower using liquid sulphur as a cooling medium. Here the sulphur vapors and condensed sulphur are further cooled to a temperature of approximately 275 F.

The gas stream leaving the first wash tower contains unreacted hydrogen sulphide, sulphur dioxide, carbon dioxide, water vapor, and other reaction products. It passes to a natural gas-fired reheater where its temperature is raised to approximately 500 F. Increased recovery efficiency to a minimum of 90 percent is obtained by passing the gas through the convertor containing a bauxite catalyst. Sulphur produced in the convertor is removed in the second wash tower and the spent gases vented to the atmosphere. The condensed sulphur as made flows directly to a rundown tank from which the

sulphur may be stored for shipment as a liquid or transported to dry storage pile for shipment as bright yellow sulphur.

Sulphur from this plant will be marketed as bulk sulphur and will be trucked 17 miles to railhead at Okotoks for shipment to various points in Canada.

Sulphur has a freezing point of 235 F. At temperatures above 300 F. it becomes extremely viscous making pumping and handling difficult. The design of a sulphur recovery plant must consider these characteristics. Precaution must be taken in the design to insure against freezing of sulphur in the system as well as providing for holding any condensed sulphur at the proper pumping and handling temperature of 275 F.

Due to Royalite's varying gas operation the design of the plant must be flexible from an operating standpoint. The air for reaction must be continuously metered to suit the variation in acid gas flow.

Since the plant must operate continuously in the extreme winter conditions encountered, the steam generating and sulphur condensing equipment will be partially housed. The combustion air blower will also be located in the housing as will the control equipment.

A great amount of heat is liberated in recovering sulphur from hydrogen sulphide and the successful commercial recovery of sulphur is materially assisted by the satisfactory utilization of this waste heat, thus saving fuel in the main boilers. Steam will be generated at 225 psig. saturated.

In order to insure continuity of operation all main drives will be by steam turbines thus eliminating possible shutdown from power failures. Since the Girbotol plant uses steam at 25 psig. for MEA regeneration, turbine drives will exhaust at this pressure.



Robert M. Leach

chairman of the board, Glenwood Range Co., Taunton, Mass., died suddenly on February 18 in Mt. Dora, Fla., while on vacation.

Mr. Leach joined the Glenwood organization, then known as the Weir Stove Co., shortly after completing his sophomore year at Dartmouth College in 1900. He was employed as a salesman, later rising to the positions of sales manager and eventually treasurer. In 1942 he was elected chairman of the board.

Mr. Leach was active in local and national politics and served in the House of Representatives where he completed the unexpired term of the late Congressman William Greene. He was succeeded by the present Massachusetts congressman, Joseph W. Martin, Jr., in 1924.

During 1926 and 1927 he was a director of American Gas Association and was a past-president of the National Association of Stove Manufacturers.

Mr. Leach is survived by his widow, Mrs. Marguerite White Leach; two sons, Malcolm Leach, vice-president of the Glenwood Range Co.; Walker Leach, president-treasurer of the Glenwood Range Co.; one daughter, Mrs.

Frank Archer; a brother, nine grandchildren and one great grandson.

Edwin Embree

assistant secretary-treasurer of New Haven Gas Light Co., died suddenly on March 10, at the age of 54.

After graduating from Peirce Business College, Philadelphia, Mr. Embree served the Westinghouse International Co. and United Gas Improvement Co. for several years. He joined the New Haven Gas Light Co. in 1929 as a general auditor, and in 1948 was named assistant secretary and assistant treasurer.

Active in American Gas Association and New England Gas Association, Mr. Embree was a former chairman of the A. G. A. Accounting Section. He was also a member of the New Haven Chamber of Commerce.

Mr. Embree is survived by his widow, Mrs. Gladys Baldwin Embree; a son, Frederick W. Embree; three grandchildren, a sister and his mother and father.

Walton Forstall

former vice-president in charge of distribution of The Philadelphia Gas Works Co., died on March 1 at the home of his son, Charles, in Pittsburgh. He was 82.

Mr. Forstall was a graduate of the Chicago Manual Training School and Lehigh University, where he was awarded a degree in electrical engineering in 1891.

Before joining the Philadelphia Gas Works in 1898, he was associated with the engineer-

ing departments of the East River Gas Co., N. Y., the Lockport Gas Co., N. Y., and the Greentown, Ind., Gas Works. He remained with the Philadelphia utility until his retirement in 1936.

The author of a book on gas distribution, Mr. Forstall was a member of American Gas Institute and of the National Commercial Gas Association until they were merged to become the American Gas Association in June, 1918. He was a charter member of A. G. A. He served as vice-president and board member of the Franklin Institute, and was a member of the Illuminating Engineering Society and the Philadelphia Chamber of Commerce.

Surviving are his wife, Nina D. Forstall; three sons, Edward, Charles and Walton, Jr.; a daughter, Mrs. Anne Crowe; and a brother, Alfred.

Louis E. Fischer

chairman of the board, Kansas-Nebraska Natural Gas Co. and former president of Northern Natural Gas Co. died on February 15 at the age of 75, in Chicago.

Mr. Fischer was one of the principal executives when, in 1930, Northern Natural Gas Co. was formed. He was at that time operating vice-president for the North American Light and Power Co., one of the three proprietary companies of Northern Natural. In 1933, he became president of Northern Natural.

Mr. Fischer was a member of American Gas Association. He is survived by his widow, Mary McCord Fischer.

Expand natural gas facilities in four areas

THE FEDERAL POWER COMMISSION has authorized construction of additional natural gas facilities in four regions of the United States.

In Shreveport, La., The United Gas Pipeline Co. plans to build an 11.3-mile line in Terrebonne Parish. The cost of the 20-inch pipeline, which will draw on the now untapped gas reserves at Kent Bayou and Turtle Bayou fields, is estimated at \$1,461,000. It will have a capacity of 143 million cubic feet of gas per day.

The New York State Natural Gas Corp. will spend about \$6,018,000 on a 104.7-mile transmission line in New York and Pennsylvania. The corporation will also install 1,820 additional horsepower at two Pennsylvania compressor stations to meet expected increases in demand in Syracuse, Rochester, Utica, Albany and Buffalo.

Transmission facilities in Colorado will be increased 84 million cubic feet a day when the Colorado Interstate Gas Co. completes its

\$3,379,532 project. The system capacity then will be about 452 million cubic feet per day.

The Ohio Fuel Gas Co., Columbus, is now constructing a 31.2-mile pipeline in central Ohio for the transmission of natural gas to underground storage and market areas. The 20-inch line, estimated to cost \$1,440,000, will extend from one compressor station in Licking County to another in Richland County. The new facilities will have a capacity of 142 million cubic feet per day.

Annual reports

(Continued from page 14)

"Brought up as I was under such old-fashioned 'horse and buggy' notions as making ends meet with a little left over for the inevitable rainy day . . . I am convinced that the economic limit of taxation has been reached and long since passed. For 1951 system taxes were \$18,870,000, up \$8,182,000 from 1950. The tax bill was more than twice the amount provided for depreciation, more than the cost of all the natural gas sold and almost twice the net income."

Consolidated net earnings of American Natural Gas Co. and subsidiaries were \$9,520,369 for 1951, up 15.9 percent from \$8,212,899 in 1950. Gross utility revenues for the year were \$97,585,274, up 20 percent from \$81,047,897 in 1950. Total operating expenses rose 22 percent, from \$66,946,088

in 1950 to \$81,494,708 in 1951.

Gas distributing companies of the American Natural Gas system sold 117.5 billion cubic feet of gas in 1951, an increase of 17 percent over the preceding year.

Transcontinental Gas Pipe Line Corp., Houston—Construction in 1951 included the installation of additional facilities as part of the plan to raise daily deliveries from 505 to 555 million cubic feet. Five additional river crossings were completed during the year: An 18-inch line was added across the Mississippi River, supplementing the two 24-inch ones already in place; a second 12-inch line was laid across the Delaware River and a second 30-inch line was put across the Coosa River suspension bridge.

During the year Transcontinental completed the Atchafalaya River suspension

bridge in Louisiana. Carrying two 30-inch lines, this 4,678-foot crossing is the longest of its kind in the world.

Another important phase of this year's construction was the installation of additional facilities at 12 compressor stations as part of the plan to raise daily deliveries. By the end of the year all but three of the stations were operating with their increased facilities, enabling the company to serve a steadily growing market in the Piedmont area.

Other construction completions included a number of sales meter stations, work on the cathodic protection and corrosion control program, and final work on the towers of the microwave system between Texas and Linden, New Jersey. Three steam-driven centrifugal stations were completed and put into operation, and 123 housing units for employees at compressor stations were finished.

Pick convention themes

(Continued from page 9)

Convention Hall or elsewhere. Every possible effort will be expended by A. G. A. and GAMA to increase attendance at this dramatic show of modern gas appliances. Varying former procedure, gas appliance dealers will be urged to attend the convention each of the four days of the convention, instead of concentrating on a single day.

A gala evening will be staged at the exhibition hall on Tuesday.

The Entertainment Committee, under the chairmanship of Earl Smith, presi-

dent, The South Jersey Gas Co., is arranging a high calibre program of recreation and relaxation. The President's Reception and Ball will be held Monday night. Tuesday night will be open for social visits. On Wednesday night the committee has arranged a fine program of musical and terpsichorean numbers, followed by dancing to the music of a well known band. On Thursday, under the sponsorship of GAMA the Entertainment Committee will offer another exceptional group of entertainers of top flight ability. One afternoon during the convention will be devoted to the Ladies' Party.

The registration fee will be \$10 again this year, with wives and other non-member ladies receiving complimentary badges. A record attendance is expected at the convention, and nearly two thousand advance registrations have been made to date. The General Convention Committee is urging management to send as many delegates as possible to the convention this year. It also recommends that for a better choice of accommodations, reservations be made immediately through the American Gas Association Housing Bureau, 16 Central Pier, Atlantic City, New Jersey.

Gas rates lag

(Continued from page 16)

cost \$89 to heat an average home in Columbus in 1950 with natural gas. Heating the same house by coal cost \$142 and the cost of heating by oil would be \$208. Natural gas, a premium fuel, is priced below competitive fuels in many parts of the country.

The Portland (Oregon) Gas & Coke Co. has petitioned a rate increase to meet heavier labor, pension and tax costs. On the basis of 1951 earnings, the company's rate of return on its invested capital was less than five percent, though commissions regard six percent as a fair return. Compensatory rate relief is necessary to enable the company to meet financial obligations and to operate on a sound economic basis, gas company officials said.

The Southern California Gas Co., Los Angeles, has held gas rates fairly stationary for the past ten years, though practically all other living costs have risen 50 percent to 200 percent. Wages paid by the company are up 110 percent since 1940; cost of gas purchased has risen 75 percent; and federal income taxes have more than doubled. A few years ago, the company points out, new money for small construction programs could be borrowed at cheap rates. Now construction requirements have grown so that the company has to finance with both bonds and stock at about 50-50 ratio. The combined annual cost today, including income taxes, has about quadrupled, necessitating a petition for higher rates.

The Pacific Gas & Electric Co., San Francisco, in a recent successful petition for a gas rate increase, showed that gas department labor costs for

maintenance and operation for the first six months of 1950 were 230 percent of similar costs in the first half of 1940. The average price of 4 1/2-inch pipe rose 177.5 percent from 1940 to 1950. The price for tank plate rose 35.2 percent from 1940 to 1950, while the price of one type of gas meter rose 99.9 percent in the ten-year period.

The Columbia Gas System, New York, in the past six years has spent millions of dollars for new facilities and services to meet expanding demands and to stabilize operating costs. Expenditures include \$268 million or \$107 per customer for new service and transmission facilities and \$50 million for development of underground storage and cushioning depleted fields with gas.

But even such tremendous investments and the economies they produced cannot cancel the rising costs of materials and supplies. Columbia pays \$123 a ton for pipe it bought for \$51 in 1940, a rise of 225 percent. A gas meter cost \$8.40 in 1940, today it costs \$18.80. The cost of a half-ton truck has climbed from \$591 in 1941 to \$1,461 today. The cost of drilling a gas well has tripled since 1931 and more than doubled since 1941 in the Columbia System. The composite hourly labor rate has more than doubled in the past ten years.

Even the new pipeline companies feel the pinch of rising costs. The Transcontinental Gas Pipeline Corp. has been in existence less than three years, yet it had to petition the Federal Power Commission for rate increases totaling about \$13,650,000. Since 1949 the company's tax rate rose from 38 percent to 52 percent. Texas recently added a gathering tax of 9/20ths of a

cent per Mcf. on pipelines. In three years state, local and other taxes have risen about five percent. Average weekly wages in the gas utility industry have risen from about \$64.00 in July, 1949 to \$71.75 in August, 1951. Being a new company Transcontinental believes its labor costs rose even a greater percent.

C. T. Chenery, chairman of Southern Natural Gas Co., recently told a group of New York security analysts that users of natural gas would have to pay higher prices in the next few years. His company pays an average of 6.53 cents per Mcf. for the gas it buys. This average derives from prices ranging from 4.62 cents to 11.90 cents per Mcf. The average resale price is 18.75 cents per Mcf. Taxes add about four cents to the average cost of 6.53 cents per Mcf. leaving a net of 8.25 cents to cover operations including transporting gas from wellhead to customers.

Out of this margin must come any return to stockholders on more than \$100 million invested in plant and facilities. Any increase in costs narrows that margin to the point where increased rates are necessary. This situation is typical of most companies in the gas industry today. Rising costs have narrowed profits to a point of no return. Each increase in the cost of doing business now must be passed on to customers or financial credit of the companies would be impaired. With new money needed to finance the \$4.5 billion dollar construction program ahead of the gas industry for the next five years, credit must be maintained. Regulatory bodies are cognizant of this fact and are generally inclined to help gas companies earn a fair return on invested capital to attract investors.

Wisconsin utility modernizes Sheboygan plant

AS PART OF a program to streamline operations, the Wisconsin Public Service Co., is building a new combination warehouse, garage and gas service section estimated to cost \$175,000, announced O. W. Barescher, Sheboygan division manager.

The facilities will include a meter shop to test, clean and repair gas meters. A warehouse will be on an elevated foundation about 3½ feet above the service section and garage so that loading and unloading of trucks can be carried out level with the warehouse floor.

This is the third major modernization step to be taken by the Wisconsin utility in recent years. Two years ago, the office building in Oshkosh was completely remodeled, while last year a new office, garage and service building in Green Bay was completed.

Cite utility president's employee-relations effort

MURRAY F. GILL, chairman of the board and president, Kansas Gas & Electric Co., Wichita, spends a great deal of time getting out and rubbing elbows with the utility's employees, according to a recent article in *Advertising Age*. The article recommends Mr. Gill's activities as good employee relations that "can be followed profitably by heads of both" large and small utilities.

"His most recent pilgrimage into his territory was to the company's Ripley generating station. He went there with some of the other boys from headquarters to pay honor to 65 employees of that station who had just completed 10 years without a lost-time accident." Before speaking at the ceremony,

"he put on a white coat and a chef's hat and broiled steaks for the entire group. He has a knack for this sort of thing, and saw no reason why he couldn't exercise it [nor] any reason why the executives who accompanied him shouldn't wait on tables. The net result of this festival was that everybody got to know the company president and his associates even better than they knew them before. If anybody lost any dignity in the process, no one seems to know who it was.

"Employer-employee communication is important in a structure of this character, for it isn't all housed under one roof; on the contrary, it is an organization with scattered employees, who may go for weeks and

even months without any group contact. If the employees can't get to headquarters to see and hear what's going on, then the chairman-president moves out into the territory to paint the picture for them.

"The program for supervisors at Kansas Gas & Electric is one of the most progressive supervisory programs in the country. It is an around-the-clock relationship, built upon conferences that supervisors originated and direct; the supervisors themselves asked for a monthly newsletter, in order that they might have full information about operations, policies and programs. The big, important touch, however, is provided by Mr. Gill, who knows that any communications program needs a personal relationship."

Skip readings

(Continued from page 26)

7-C. What other methods are used?

Mailed on request; Mailed after third estimate; Six-month supply given with meter reading schedule.

7-D. Are cards mailed by customers—
Yes, 37 companies.

Cards picked up by representatives—Yes, 9 companies.

7-E. Are cards mailed generally received in time for regular billing?

Yes, 16; No, 21.

7-F. How many consecutive customers' readings will you accept?

1 mo.—1	7 mo.—1
2 " — 7	8 " — 2
3 " — 14	11 " — 1
4 " — 1	12 " — 1
6 " — 9	Unlimited—2

8. Is time provided in the day's work of the meter reader to permit call back on same day?

Yes, 11; No, 34.

9. Is a day allowed in reading schedule to read meters skipped on the regular call?

Yes, 12; No, 30.

10. Is different action taken on skipped meters, depending upon the size and type of account?

This cannot be answered without some explanation and the answers submitted indicate that the special or large accounts receive additional attention.

11. Are you transferring meters to the outside when you experience reading difficulty?

This is being done to a very limited extent. In many cases only upon the request of the customer.

12. Do meter readers leave door knob cards notifying customers the next scheduled call, if reading is not obtained?

Yes, 10; No, 32.

13. Do you inform customers of scheduled reading dates?

No, 7; On request, 38; In all cases, 1.

13-A. By what means?

Shown on bill

14. Do you request keys to premises from customers when readings cannot be obtained (keys to be retained by the company)?

Yes, 32; No, 3.

14-A. How are keys identified?

The general answer was a metal tag showing the account number attached to the key.

14-B. How are keys filed?

The practice is to file the keys on a ring for each reading unit in account number order and to charge the meter reader with the number of keys assigned daily.

15. Do you have any other procedures which have proved successful, including special letters, publicity, etc?

The meter reader lists meters which he is unable to estimate or such information is obtained from the billing or customers' accounts department. The telephone is used where possible to arrange for admittance on the regular reading date or letters are sent to customers.

16. Do you read meters at other than regular working hours?

At night, 16; Saturday, 18; Over-time basis, 13; Regular schedule other than 8-5, 12.

17. Do you charge for obtaining special readings at other than scheduled time?

Yes, 2; No, 43.

A letter was written to each of the companies answering in the affirmative. The replies received indicate that a charge is made only when the customer requests a special reading and not as a procedure for reading "skipped."

18. Do you ever discontinue service when readings cannot be obtained?

Yes, 20; No, 23.

The "yes" answers qualified their reply. Generally this is a last resort only after all efforts have failed following adequate notice.

Suggestions for improvement

The state regulatory bodies may have requirements concerning the efforts made to obtain readings, but within those limits, the following steps may be taken to obtain readings at regular times:

1. Analysis of skips. Find out why readings are not obtained. Keep a record of the missed readings reported by each meter reader. Analyze and compare the work of the men and institute field supervision where necessary.

Classify "Skips" as to "Regularly missed," and "Occasional." Study the regular group and give individual attention in the form of telephone calls and letters. Endeavor to obtain keys or have keys left with neighbors.

As regards both regular and occasional skips, it is feasible to average or estimate missed readings. Your preceding analysis will probably show that less than twenty percent of your skips are regular. If you average or estimate, you will usually be able to get a regular reading every three or four months and the "Skip" problem is greatly reduced.

House heating accounts can be successfully averaged after experience on a degree day basis and should not be eliminated from consideration. The following formula has been satisfactory to a large northeastern utility:

"Estimate total hundred cubic feet for heating season, or, base on prior year's actual consumption. Divide by total degree days in prior heating season. This gives cubic feet per degree day. Multiply the cubic feet per degree day by the degree days in the period to be estimated. The degree day factor is entered on the meter reading record and the total degree days are calculated for each route daily."

Averaged or estimated readings cause problems. With 10,892 estimated bills in January, the company previously referred to made 730 sales adjustments or 6.70 percent. Many high bill complaints result from estimated readings, which would have been avoided if actual readings had been obtained.

Some customers object to estimated bills. They should be encouraged to read their own meters and send in marked dial readings in time for regular billing.

2. We should give full information to our customers concerning reading dates. One company puts the date of the next reading on its bill. Thirty-nine companies give this information on request or to certain accounts by door knob cards. Schedules which the meter reader carries in his book and gives out to customers on request, or schedules which are handed to or mailed to customers on request are used by other utilities.

3. Study the possibility of allowing time for call back by regular meter reader on the same day. If a half-hour or hour is allowed for call back time, it takes from 10 percent to 20 percent of the effective field time from regular reading and must be considered as a missed reading expense. This should be carefully analyzed as to the results obtained. If by doing so, a few readings are obtained which are only occasionally missed and could be conveniently estimated the cost appears high.

In the opinion of the committees, no general policy can be established and each meter reading route would have to be considered individually. However, if meter reading books have a growth allowance over the required reading time, such time could be well used for call back purposes.

4. Arrange day's work, to the extent possible, in accordance with customers' requirements. Residential areas give better results to morning readings. Business areas are better in the afternoon.

5. Don't make special calls on the occasional skip unless the account is large or you are required to do so because of unusual circumstances.

6. Keep some flexibility in reading schedules in business areas so that consideration can be given to reading a day early or a day late to avoid excessive skips when commercial premises are closed due to religious holidays or business practices (such as Wednesday p.m. closing).

7. Install meters on the outside where climatic conditions permit. This applies in rural and suburban areas even when gas meters (combination companies) must be installed inside because it facilitates estimating gas meter indexes if electric readings can be obtained.

8. Continue experimental work on outside gas meters or dials.

9. When all members of the house-

hold are regularly away during business hours, keys are just about the only solution. The key should be identified with a metal tag showing the utility's post-office box number, the folio or permanent account number. It should be issued with the meter reading book. All keys for the same reading book should be placed in reading order on a ring which should be clipped to a chain carried by the meter reader to prevent loss. The keys should be accounted for when the meter reading book is returned.

Caution should be exercised in assuming that permission has been obtained to use the key when a premises changes hands. This can be called to the attention of the meter reader by means of a notation alongside of the customer's name in the meter reading book or card.

10. Train employees. Impress on all employees the importance of eliminating unnecessary skip calls. Train them to question customers to find some way of reading on regular reading dates. This applies particularly to the meter readers who are assigned the work of obtaining skip readings. It is realized that this is like asking a man to talk himself out of a job and there probably will be some resistance which will challenge management's ability.

11. Seek customer cooperation by means of telephone calls and letters. Excellent use can be made of the records of your analysis in determining where telephone calls or letters are desirable.

12. Charge for obtaining a missed reading. Such a suggestion would, if adopted, solve the problem in itself. However, it presents many problems; the regulatory body and customer relations being two of the major considerations.

There appears to be some precedent for such action as there are many charges now being made for services which were previously free. Included in these are turning on and off of house heating equipment, reconnection after shut-off for non-payment, cleaning house heating equipment, and installing fuses.

The committee is of the opinion that meter reading costs would be reduced up to ten percent, depending upon present operations, by proper consideration of the skip problem. It was also agreed that a substantial reduction could be made in the billing costs.

A careful analysis of each utility's particular problems will prove itself a profitable undertaking.

Production conference

(Continued from page 31)

devoted to "Chemistry in the Gas Industry." Topics for discussion at this conference include: "Odorants and Odorization;" "Leakage Surveys;" Filters and Dust Problems;" "Autohydrogenation of Oil Gas;" "New Books for the Gas Industry;" "New Instruments;" "Coloring Natural Gas—Can it Be Done?"; "Photographing Gas Flames;" "Product Combustibility;" and "The President's Mate-

rials Planning Commission Report," if it has been released.

The High Btu Gas luncheon conference presented by the Gas Production Committee Subcommittee on the Manufacture of Higher Btu Gases will have C. E. Utermohle, Jr., technical supervisor, Consolidated Gas Electric Light & Power Co. of Baltimore, as chairman. V. M. Perry, superintendent, Citizens Works, The Brooklyn (N. Y.) Union Gas Co., will be alternate chairman.

Ward A. Meldrum, superintendent of

production, Michigan Consolidated Gas Co., Ann Arbor, is to be chairman of the luncheon conference given by the Gas Production Subcommittee on the Use and Handling of LP Gases. Dean B. Seifried, distribution engineer, Rockland Gas Co., Inc., Spring Valley, N. Y., is to be alternate chairman. Among the discussion topics scheduled are: "Engineering for Safety in LP-Gas Plants;" "Training of Personnel for Operation of LP-Gas Plants;" and "LP-Gas Plant Accidents and How to Prevent Them."

Salesmanship school

(Continued from page 28)

Friday, the closing day of the school, will be under the chairmanship of James J. Condon. L. A. Dubberke, supervisor, hotel and restaurant division, Milwaukee Gas Light Co., will open the morning session with a lecture on "Service and Installation." He will develop the theme that a sale is not completed until the equipment is properly installed and adjusted, nor is a sale completed as long as service is required. Proper installation and proper service are among the many selling tools.

"Developing Sales Techniques and Tools" will be the subject of W. D. Relyea's Friday morning lecture. He will show that only a constant reminder of the selling tools and selling techniques available to the commercial gas man will keep him at top working efficiency.

All salesmen need inspiration, and

putting "fire" into sales presentation is half of the battle, according to Milton J. Firey, owner-manager, Congress Hotel, Baltimore, who will deliver a lecture on "Sales Techniques."

The morning session will be concluded with comments on the course by Lawrence E. Biemiller.

The closing afternoon will be devoted to an examination, based on material presented in the lectures and in the printed texts used during the school.

The five-day program will provide instruction in the full scope of commercial gas utilization in the volume food service field.

The textbook for the school will be the manual, "Commercial Kitchens," published by A. G. A., on which many of the lectures will be based. Students who do not have this manual may purchase it at the school for five dollars a copy. Printed copies of lectures which are on subjects not included in the manual will be dis-

tributed to students. Certificates will be awarded to those who satisfactorily complete the course.

Adequate rooming facilities have been reserved by American Gas Association at Edgewater Beach Hotel for all those attending the school. In some cases it may be necessary for students to share twin-bed rooms. Reservations will be made by American Gas Association on receipt of registration blank with fee.

Applications for enrollment should be mailed to Industrial and Commercial Gas Section, American Gas Association, 420 Lexington Avenue, New York 17, N. Y. The registration fee is \$35.00 and a check for this amount, made out to the order of American Gas Association should accompany each application. Rooms, meals and other expenses are to be paid by the registrants and are not included in the registration fee.

Registration will close on April 30, 1952.

Installation standards

(Continued from page 19)

tion by reference is not yet possible and the other is how to keep a code up-to-date. We are calling this procedure the *prima facie* evidence method. It has already been used many times during the last two years with complete success.

In a typical ordinance of this kind, such as that of Sheboygan, Wis., two key phrases comprise the ordinance:

- "1. *Safety standards*; all gas appliances and accessories herewith installed, sold or offered for sale shall conform to reasonable standards of safety, and
- "2. *Installation standards*; gas appliances, accessories, and piping systems shall be installed to conform to reasonable standards of safety."

You will recognize these two statements as common concepts of safety. To put teeth into them and thereby to secure enforcement of Z21.30 the ordinance has additional clauses or footnotes. These are ostensibly for the guidance of enforcement officers. They read quite simply: "The presence of the seal of a nationally recognized testing agency, adequately equipped and competent to perform such service, shall be *prima facie* evidence that the appliance in question conforms to such reasonable concepts of safety. Such a testing agency shall be one which maintains a program of national inspection of production models of all approved types of gas appliances at least once each year on the manufacturer's premises. Approval by the A. G. A. Testing Laboratories as evidenced by the attachment of their Seal of Approval or a certificate or letter certifying approval

shall be considered as such *prima facie* evidence."

In a similar vein, conformity to Z21.30, etc., shall be considered *prima facie* evidence of reasonable safety in line with the second clause of the ordinance.

While this type of ordinance is perhaps not the final answer, since the enforcing authority might possibly accept some other kind of evidence, it is believed that it goes a long way toward accomplishing what hasn't yet been done even though we are in the 25th year of approving gas appliances.

Since many cities expect to get natural gas within the next year or two, this is the most opportune time for reviewing with local lawmaking bodies the entire problem of a gas ordinance. The enactment of a standard would produce greater safety and in turn greater customer acceptance of gas; and through uniformity

1952

APRIL

- 4 •The Maryland Utilities Association, annual meeting, Lord Baltimore Hotel, Baltimore, Md.
- 7-8 •Eastern Natural Gas Regional Sales Conference, Hotel William Penn, Pittsburgh, Pa.
- 7-9 •National Conference of Electric and Gas Utility Accountants, Hotel Commodore, New York, N. Y.
- 7-10 •A. G. A. Distribution, Motor Vehicles and Corrosion Conference, Benjamin Franklin Hotel, Philadelphia, Pa.
- 16-18 •A. G. A. Sales Conference on Industrial & Commercial Gas, Netherland Plaza Hotel, Cincinnati, Ohio.
- 21-23 •A. G. A. Mid-West Regional Gas Sales Conference, Edgewater Beach Hotel, Chicago, Ill.
- 24-25 •Indiana Gas Association, annual meeting, French Lick Springs Hotel, French Lick, Ind.
- 28-30 •Southern Gas Association, annual meeting, Galveston, Texas.

MAY

- 5-9 •A. G. A. Commercial Gas School, Chicago, Ill.
- 8-9 •Public Utilities Advertising Association, Hotel Radisson, Minneapolis, Minn.
- 12-13 •A. G. A. Natural Gas Department Spring Meeting, Biltmore Hotel, Los Angeles, Calif.
- 13-15 •Pennsylvania Gas Association, Wernersville, Pa.
- 21-23 •GAMA annual meeting, The Broadmoor, Colorado Springs, Colo.
- 26-28 •A. G. A. Production & Chemical Conference, Hotel New Yorker, New York, N. Y.
- 27-29 •Southwestern Gas Measurement Short Course, University of Oklahoma, Norman, Okla.
- 28-30 •Short Course in Gas Technology, Texas College of Arts and Industries, Kingsville, Texas.

JUNE

- 5-6 •A. G. A. Research and Utilization Conference, Hotel Statler, Cleveland, Ohio.
- 5-6 •The Natural Gas and Petroleum Association of Canada Convention, General Brock Hotel, Niagara Falls, Ontario.
- 8-12 •Canadian Gas Association, Chateau Frontenac, Quebec City, Quebec.
- 16-22 •International Gas Conference, Brussels, Belgium.
- 23-24 •Michigan Gas Association, annual meeting, The Grand Hotel, Mackinac Island, Mich.
- 23-27 •American Society for Testing Materials, annual meeting, Hotel Statler, New York, N. Y.

of requirements building costs would be kept down. This happy utopia, however, will not come of itself, for the missing link is enforcement of the standards. This is best done through voluntary acceptance by builders, architects, and appliance installers but it is helped materially when required by local law.

The A. G. A. Committee on Comparison of Competitive Services prepared a study of the trends in sale of gas per residential customer at five year intervals back to 1929. Excluding the great growth due to use of gas for heating, the committee found that conditions were practi-

cally static for the straight manufactured gas companies in the New England states during this period. On the other hand, the same studies made for a group of companies which converted from manufactured to natural gas clearly showed that their sales curves were up more sharply than any other group. So with such a rosy potential before us there is added reason to plug one loophole which could have an adverse effect. Let's get approved appliances installed in an approved manner so that our service will be even better than expected. The tools are ready; all we need to do is to use them.

Gas reserves gain (Continued from page 6)

(a) CRUDE OIL - AMERICAN PETROLEUM INSTITUTE

(Barrels of 42 U. S. Gallons)	
Total proved reserves of crude oil as of December 31, 1950	25,268,398,000
Revisions of previous estimates	+1,776,110,000
Extensions of old pools	2,248,588,000
New reserves discovered in 1951 in new fields and in new pools in old fields	389,256,000
Proved reserves added in 1951	4,413,954,000
Total proved reserves as of December 31, 1950 plus new proved reserves added in 1951	29,682,352,000
Less production during 1951*	2,214,321,000
Total proved reserves of crude oil as of December 31, 1951	27,468,031,000
Increase in crude oil reserves during 1951	2,199,633,000

(b) NATURAL GAS LIQUIDS - AMERICAN GAS ASSOCIATION AND AMERICAN PETROLEUM INSTITUTE

(Barrels of 42 U. S. Gallons)	
Total proved reserves of natural gas liquids as of December 31, 1950	4,267,663,000
Revisions of previous estimates and extensions of old pools ..	+ 648,497,000
New reserves discovered in 1951 in new fields and in new pools in old fields	75,494,000
Proved reserves added in 1951	723,991,000
Total proved reserves as of December 31, 1950 plus new proved reserves added in 1951	4,991,654,000
Less production during 1951*	267,052,000
Total proved reserves of natural gas liquids as of December 31, 1951	4,724,602,000
Increase in Natural Gas Liquids reserves during 1951	456,939,000

(c) TOTAL LIQUID HYDROCARBONS - A. P. I. & A. G. A.

(Barrels of 42 U. S. Gallons)	
(Tables 1a and 1b combined)	
Total proved reserves as of December 31, 1950	29,536,061,000
Revisions of previous estimates and extensions of old pools ..	+4,673,195,000
New reserves discovered in 1951 in new fields and in new pools in old fields	464,750,000
Proved reserves added in 1951	5,137,945,000
Total proved reserves as of December 31, 1950 plus new proved reserves added in 1951	34,674,006,000
Less production during 1951*	2,481,373,000
Total proved reserves of liquid hydrocarbons as of December 31, 1951	32,192,633,000
Increase in Total Liquid Hydrocarbon reserves during 1951	2,656,572,000

*The 1951 production figures were compiled by the committee and where necessary are based on eleven months actual production with an estimate for December. Any variance between the actual production, as later reported, and the figures used herein will be compensated for through revision when the following year's reserve report is compiled. These revisions have in the past been very small.

Personnel service

SERVICES OFFERED

District Foreman—has supervised operations in distribution district serving 52,000 domestic meters including construction and maintenance of mains and operation of measuring stations. Previous experience—ten years' as pipe line welder. Wishes another location preferably in Southwest for health reasons. 1695.

Manager or General Superintendent—22 years' experience in production, distribution and management. Available on 30 days' notice. Southern location preferred. Presently employed as manager. Married (43). 1696.

Controller-Treasurer-Budget Director—Skilled administrator, presently employed as such by large utility. Keen analyst, gets things done minimum cost. Thorough knowledge modern accounting techniques, IBM, auditing, finance, costs, controls, budgets, systems and procedures, credits, insurance, taxes, pensions, government contacts. Timely and accurate figures interpreted for management action. Effective controls painlessly applied. University trained—business administration, accounting, finance, statistics, law. Member Controllers Institute. Can relocate, U. S. or abroad; knowledge languages. 1698.

Sales and Service—Man interested in position with larger company with a future in sales and service after 13 years with small stove company manufacturing gas, coal, oil and combination ranges. Traveled three years as junior salesman and service man in restricted territory. Appointed assistant engineer, no degree, but I.C.S. training and valuable practical experience with engineering and sales background. Good at office administration, including excellent organizing ability, much experience answering complaint letters, can read and understand blue prints, diplomatic trouble shooter and complaint adjuster, and do follow through on detail work. (31). 1699.

Gas Engineer—Extensive supervisory experience in all phases of gas production, plant construction and maintenance; natural gas, storage, distribution and bottle filling plants for L.P. gas; industrial utilization, customers service, reforming and catalytic cracking. 1700.

POSITIONS OPEN

Gas Utilization Engineer—A Canadian natural gas company requires a utilization engineer experienced in all phases of service work. The company serves 75,000 meters in a number of municipalities which are grouped in four districts. Applicants must be capable of directing district superintendents in service work, installations inspections, training programs, etc., as well as direction of a small appliance testing laboratory and preparing installations codes, etc. Applicants should state age, qualifications, experience, references and salary expected. All applications will be treated as confidential. 0639.

Gas Engineer required as superintendent of gas operations in large synthesis gas plant which uses coke in mechanical generator sets. 0640.

Product Engineer—Midwest domestic heating equipment manufacturer has attractive opening for engineer with experience record on design and development of gas or oil fired furnaces and boilers. Include in first letter complete qualifications, education, age, experience, present compensation and salary expected. Replies to this advertisement will be kept confidential. Our employees know of this ad. 0641.

Gas Operations Manager—Graduate engineer with broad experience in natural gas transmission and distribution. Company in Ontario, Canada has natural gas production and distribution to 75,000 meters over a wide area divided into four districts, with substantial growth prospects. Position requires ability to direct all phases of operations through experienced supervisors, to initiate training programs, handle employee relations, make special studies relating to new transmission and distribution lines,

gas utilization, etc. This is one of the top executive positions in the company and should be attractive to a man about 40 years of age, of good character, and looking for an opportunity to justify an assured future.

Applications will be treated as confidential in first instances and should give fullest particulars of technical qualifications, experience in previous positions, usual personal particulars as to age, etc., and approximate salary expected. References will be required later. 0646.

Sales Representatives—An old, well-established, nationally known automatic heating manufacturer has an outstanding opportunity for four aggressive men to be located in the Boston, Washington-Baltimore, St. Louis and Chicago areas. These men will promote and sell gas-fired heating equipment to existing and new distributors and dealer sales desirable. Good salary, car furnished, expenses paid. 0645.

Engineer with ten to twenty years experience on design and operation of gas systems both in manufacture and distribution for study of system pressed for capacity in plant and line. Also to study possibility of increasing heating value from 450 to 1,000 Btu. Salary commensurate with man's ability. Living and traveling expenses paid on all work outside New York office. Location Central America. 0646.

Distribution Engineer for eastern municipally owned natural gas utility (45,000 meters) in charge of and responsible for planning, directing and supervising the activities of a joint bureau of gas and water distribution. Salary range \$5,200-6,240 annually. Reply in detail stating age, education, references and experience. 0647.

Appliance Engineer—Progressive manufacturer of Gas Heating Equipment located in the Los Angeles area desires services of an engineer experienced in the development of gas fired heating equipment. Applications should give experience, education, age, present salary and salary expected. 0648.

Work simplification

(Continued from page 24)

who was moved from one desk to another to improve the lighting conditions for his work, would not have been upset if the reasons for the change had been explained to him.

We like to know that our ideas and efforts are appreciated. Charles M. Schwab once said: "I am a firm believer in the fact that men make their greatest accomplishments by proper encouragement—not by criticism. I have yet to see the man, however great and exalted his situation, who is not susceptible to the approval of his fellow men. And the severest criticism that can come to any man is not to find fault with him, but not to notice him at all. When a man is not noticed he knows that he has not gained the approval of his fellows, but when he is approved he gives forth his best effort."

It is clear that recognition, self respect, security and praise can successfully be contained in one word—"participation." The fellow who helps to work out a proper method is anxious to improve it with the hope of improving it still further.

ther. Having had a hand in creating it, he is more likely to understand it and to enjoy using it. Participation requires recognition that those with whom we work have a vital interest in everything that affects their jobs. It begets cooperation and a truly cooperative attitude leaves no room for resistance to change.

Work simplification succeeds best in a cooperative atmosphere.

With such an understanding of the importance of recognizing the fundamental attitudes and needs of people, the supervisor is far better equipped to use successfully the principles of work simplification. It is obvious that none of the principles in a work simplification program are new. Considerable advantage is gained, however, in bringing them to supervisors in such an organized fashion since it helps to direct their thinking according to an organized pattern. It is also obvious that such a program should be very carefully developed and should be administered only by trained personnel. On the other hand, if sufficient care and thought are given to the development of the program, training of group leaders surprising improvement can result.

Metropolitan Council

(Continued from page 12)

vice-president of The Consolidated Edison Co. of New York, Inc., New York City. Mr. DeLafield described the pro's and con's of the proposed Niagara River power development program.

E. N. Spiegel, first vice-president of National Association of Home Builders of the United States, described the home building picture in his address "Gas and the New Home Building Outlook." Mr. Spiegel predicted that the number of new private dwelling units begun during 1952 probably will go between 800 and 900 thousand units, or about 18 percent less than the 1951 total. The dollar volume will probably reach about eight billion dollars, or about 22 percent below 1951, partly because of a lesser number of new units and partly because of a shift to lower priced units. Mr. Spiegel expressed the view that only two things could change this housing trend: a more extreme shortage of already scarce copper; and full-scale war.

The closing speaker for the day was C. S. Stackpole, vice-president of Eureka-Williams Corporation. Emphasizing the need for old-fashioned salesmanship and hard hitting campaigns, Mr. Stackpole was confident that "A Hot Salesman Can Do it '52." He urged that all utility sales managers instill real drive into their men, in an effort to transmit an enthusiastic belief in gas house heating to the general public.

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